







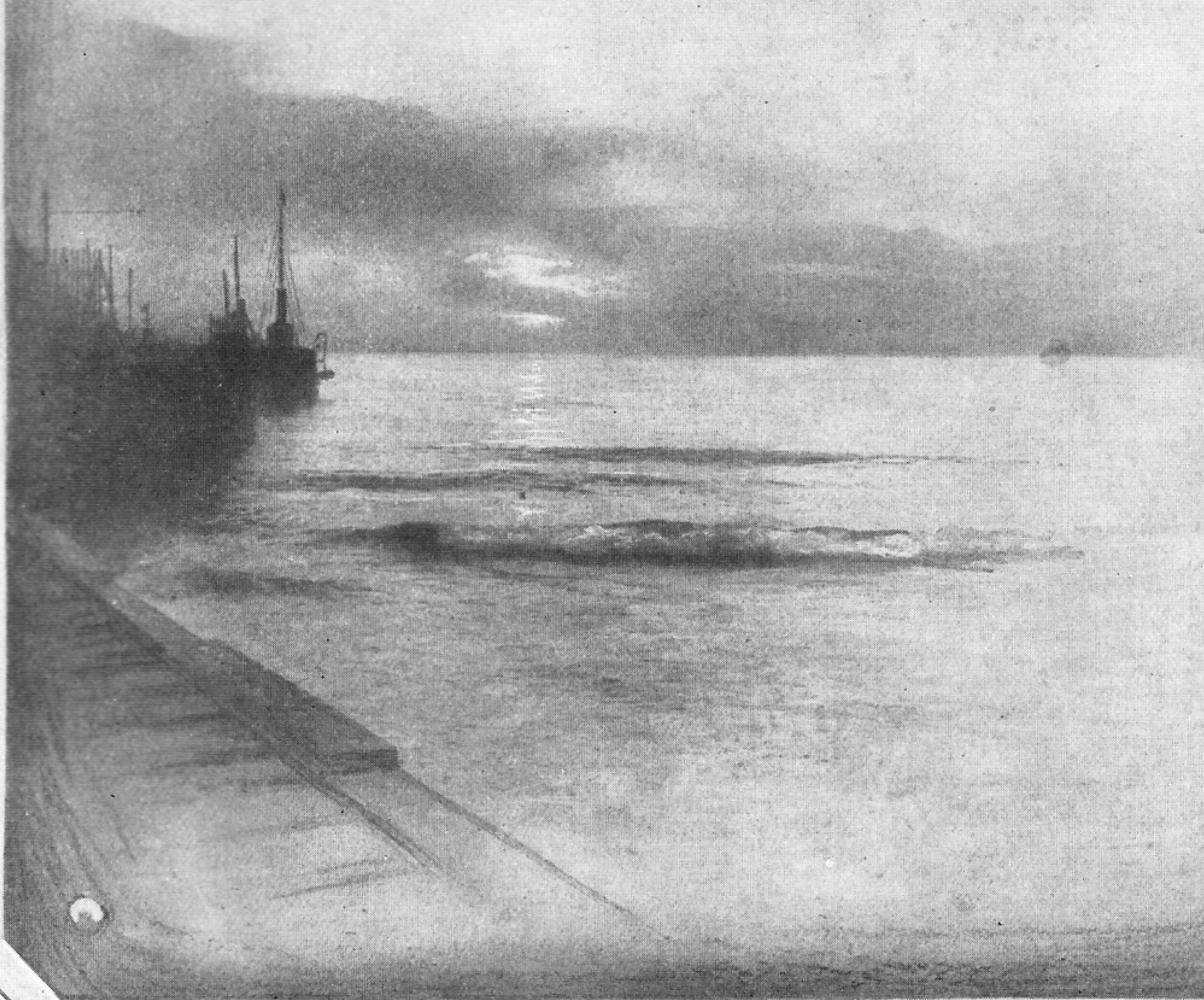
# THE BUFFALO BOOK

IN WHICH IS ALSO INCLUDED  
THE CATALOGUE OF THE

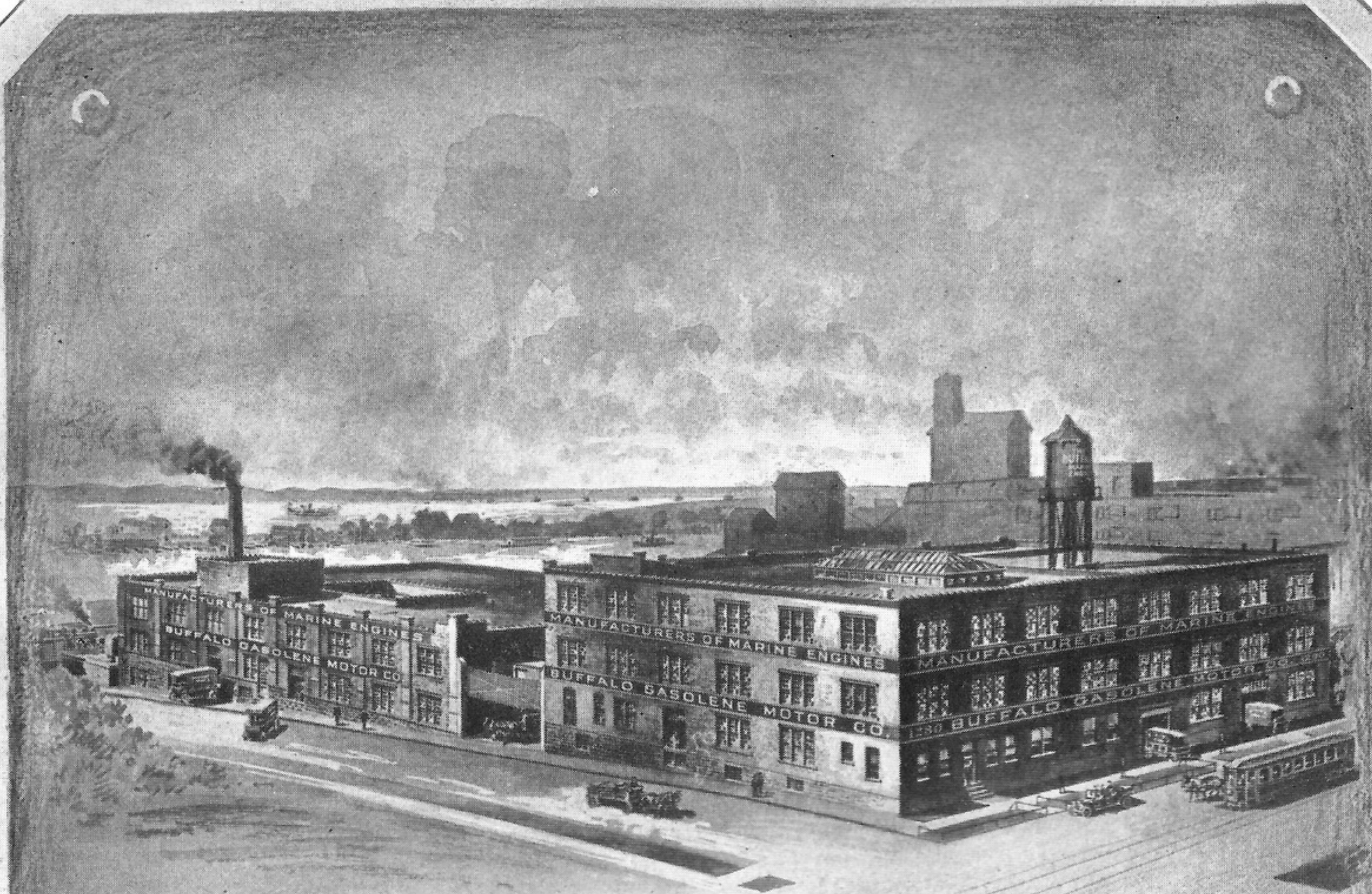
## Buffalo Gasolene Motor Co.

Buffalo, N. Y.

BUILDERS OF BUFFALO MARINE ENGINES







**T**HE Plant of the Buffalo Gasolene Motor Company, at Buffalo, N. Y., where they build Four-Cycle Marine Engines in all sizes from 3 to 150 Horse Power High Speed, Medium Speed and Low Speed



## Pronouncement



HERE is more in business than an exchange of money for merchandise. There is more in manufacturing than material, equipment and labor.

It is a sort of corporate character, a house personality which shows in every detail of manufacturing and selling.

In this spirit careful manufacturing has its inception. It is apparent in the selling methods of the organization, in the way the makers stand behind their product.

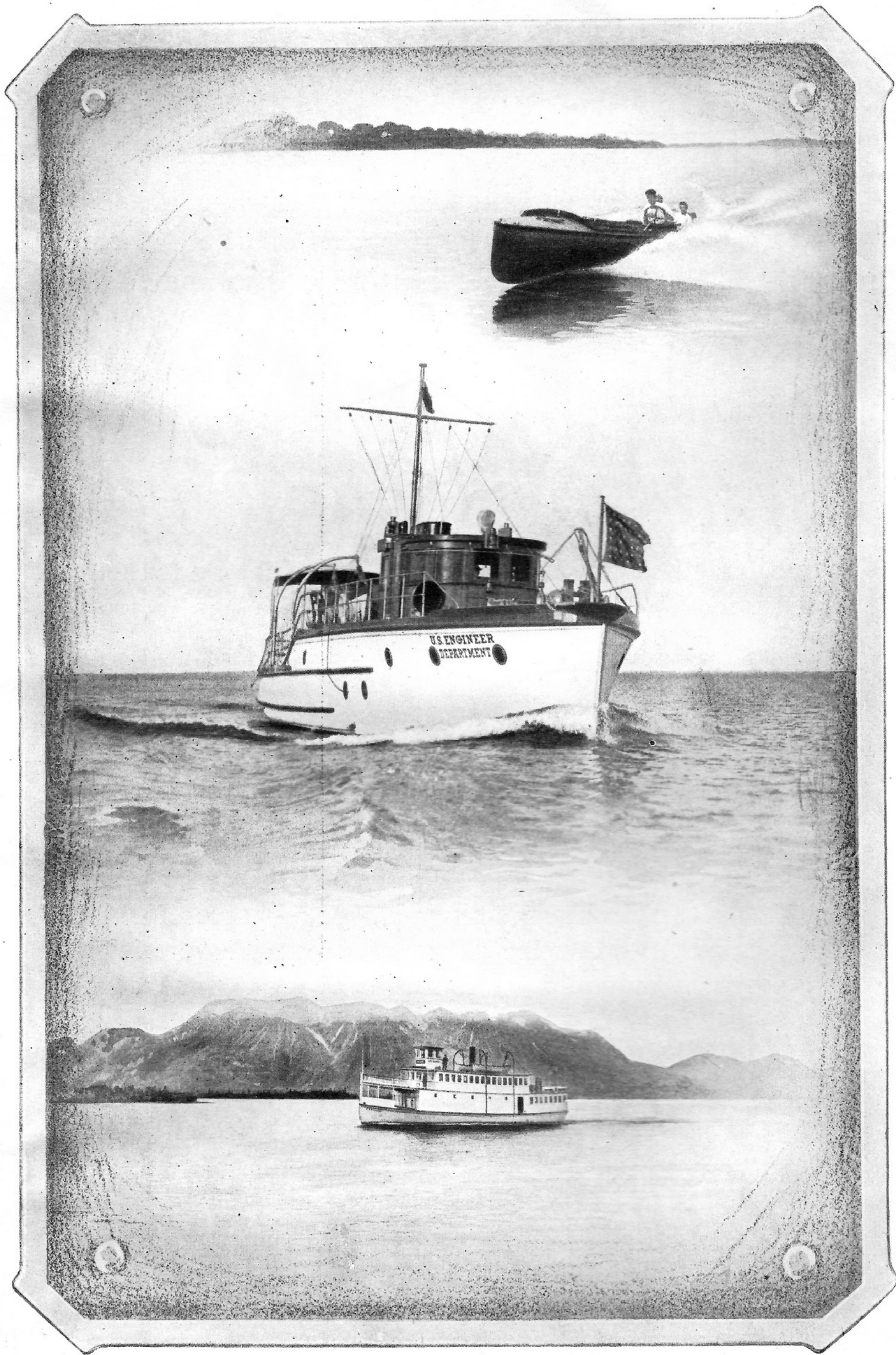
It distinguishes the well-established, dependable house from the fly-by-nighter.

It marks the difference between flashy attempts at business getting and the steady growth and progress of the house which has found its place.

For 20 years the name Buffalo has stood for that which is best in marine engines. It has stood for all that is worth while in design, the best of materials, honest workmanship, careful inspection and most important of all, it stands for a spirit of fair dealing which holds that every Buffalo engine must give complete satisfaction and that it is the business of its makers to see that it does.

It is these things which have caused Buffalos to be known all over the world as "The Engine of Constant Service."







## Buffalo Designs

The interest of the Builders of Buffalo Engines is not confined to powering any one particular type of boat. The Buffalo line includes engines suitable to craft of all kinds from the 18 foot launch to large workboats, fast runabouts and cruisers. Because of this there is no chance that Buffalo salesmen will suggest a power plant which is unsuited to the particular boat in question, for in the first place they know boats, and in the second place making engines of practically all types, we would have no object in recommending anything but the one best suited to the needs of the case.

For Boats of  
All Kinds

## Cruiser and Runabout Type

The Buffalo Cruiser and Runabout Type is designed for cruisers and fast runabouts. They are sturdy engines of medium weight and speed, the idea being to produce an engine that would combine all the qualities of reliability and endurance under long strain which have made Buffalo Engines famous, and at the same time not exceed the weight limits of the fairly light cruising boat.

Reliability  
and  
Endurance

These Cruiser and Runabout engines are built in four sizes. All are similar in the more important points of design, but there are some

Sizes



details wherein the 16-20 H. P. and 25-30 H. P. differ in general appearance from the 40-60 H. P. and the 50-80 H. P. so both models are reproduced on other pages of this book.

### Some Points of Construction

#### Base and Crank Chamber

Base and crank chamber can be supplied in either iron or aluminum, but iron is considered as regular equipment. The base is of the solid extension type. There are three main crankshaft bearings lined with removable die-cast babbitt.

#### Cylinders

Cylinders are of close grained gray iron, cast in pairs. They are thoroughly water jacketed and have large inspection panels which simplify cleaning the water jackets. All cylinders are first rough machined and heat treated, then finish machined and water tested.

#### Crankshaft

The crankshaft is of forged alloy steel, heat treated, all journals and pins being ground to size. It has large diameter giving not only increased strength but greater bearing surface. On the 40-60 H. P. and the 50-80 H. P. the camshaft is operated by a silent chain drive which also operates the water pump and magneto.



The pistons are of gray iron, machined, heat treated and carefully balanced. Each piston pin is clamped to the upper end of the connecting rod and oscillates in bearings in the piston. The drop forged connecting rods have removable die cast bearings at the lower ends, the upper end being clamped to the hardened and ground steel piston pin.

Pistons

In the lubrication system of the Cruiser and Runabout models there is some difference between the two smaller and two larger sizes which necessitates describing them separately.

Lubrication

### Smaller Cruiser and Runabout Engines

The 16-20 H. P. and 25-30 H. P. are equipped with a constant level splash system by which the oil is drawn from a sump under the base by means of a plunger pump and discharged through a sight feed glass into a distributing pipe which supplies the splash pockets into which the connecting rods dip. The proper oil level is maintained by dams which are arranged so that the oil in the base maintains a constant level with the result that the connecting rods will splash only to a uniform depth. An oil level gauge indicates the quantity of oil in the sump.

Constant  
Level  
Splash  
System

Oil Level  
Gauge



### Splash and Stream

On the 40-60 H. P. and 50-80 H. P. models all crankshaft bearings, connecting rod bearings and camshaft bearings are oiled by a constant level splash system, and the cylinders are lubricated by means of an oil pump, through sight feed glasses mounted where the feeding of the oil can be readily observed. The oil is circulated by means of a pump which draws the oil from the reservoirs in the bottom of the base and pumps it through a cooler at the after end of the engine. This cooler is cold-water-jacketed and cools the oil before it is forced through the double discharge pipe, one branch of which connects with the sight feed glasses through which the oil passes to the cylinders, and the other supplies the pipe in the base which sprays oil on the connecting rods and keeps the oil troughs into which the connecting rods dip well filled.

### Oil Cooler

### Sight Feed

### Double Ignition System

### Ignition

All the Cruiser and Runabout models are equipped with a double high tension system of ignition which includes a battery distributor system for starting and magneto for running. These two systems are entirely independent of each other even to separate sets of spark plugs so that if one gets out of order the other is always



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## The Buffalo Book

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there to fall back on. All wiring is enclosed in a metal tube above the cylinders.

The reverse gear is of the multiple disc type mounted in a solid extension base. It is completely enclosed in an oil tight casing, but at the same time it is easily accessible.

Reverse  
Gear

The Cruiser and Runabout models are supplied with valves of ample size. Push rods are of the inverted mushroom type. All valves and gears are enclosed. The exhaust manifold is so arranged that the exhaust line may be taken from either end. The exhaust manifold is water jacketed and has a warm air chamber from which warm air is supplied to the carburetor.

Valves and  
Push Rods

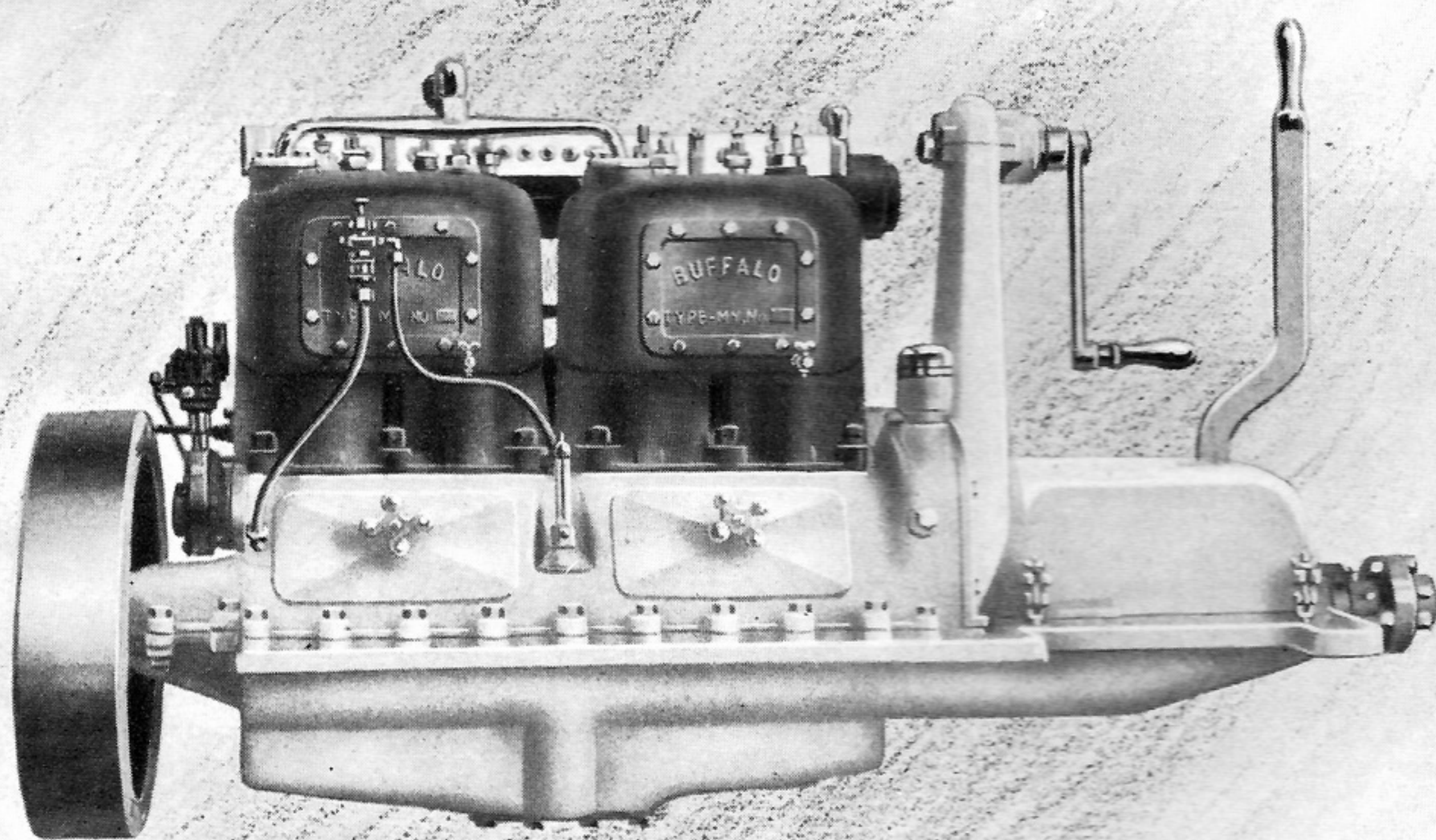
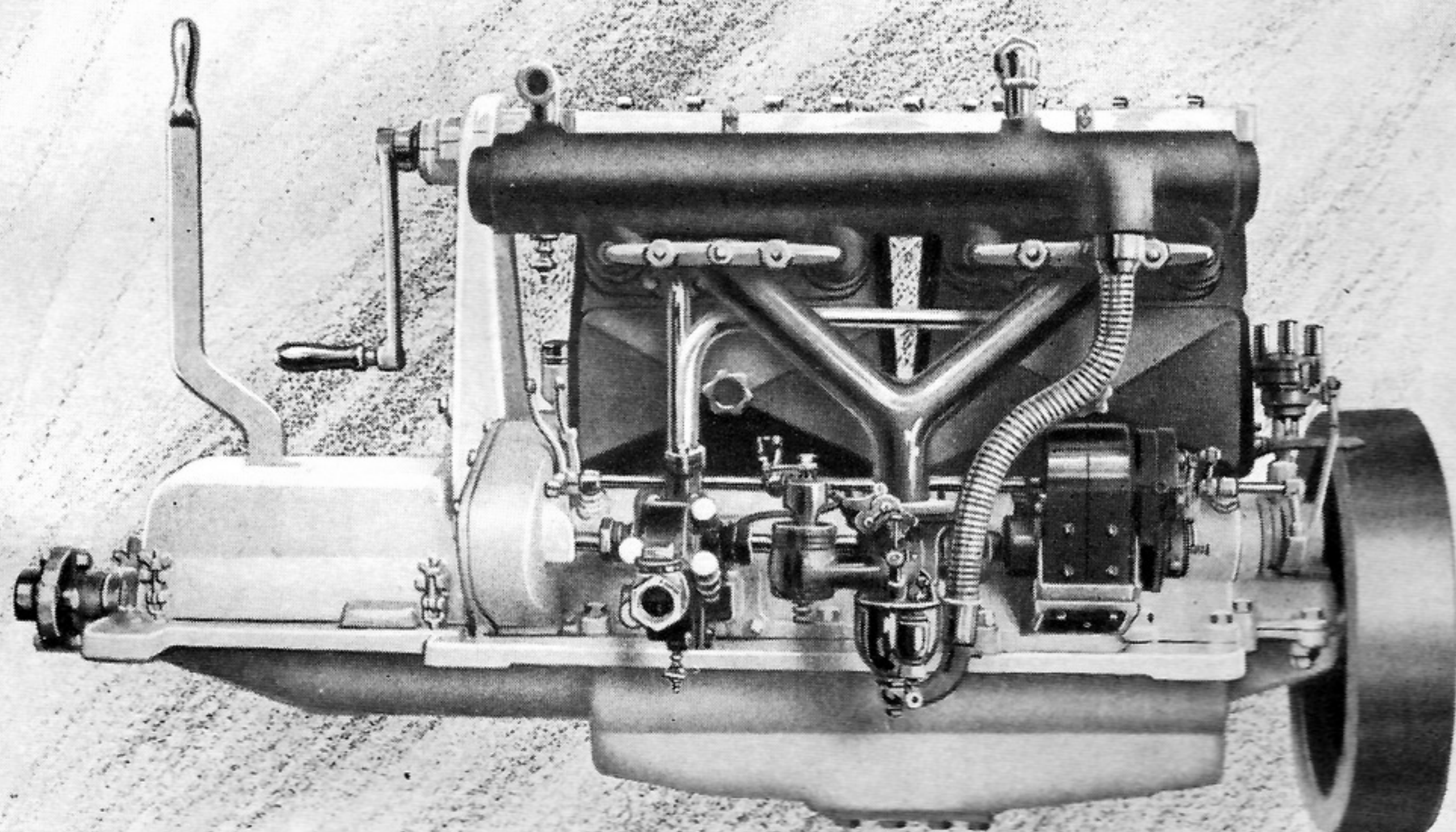
The 16-20 H. P. and 25-30 H. P. Cruiser and Runabout models have a sprocket-and-chain anti-kick-back rear starting device included in their regular equipment. They are also arranged to be started at the forward end.

Starting  
Device

The two larger models are supplied with ratchet and lever, and any of these models can be equipped with electric starters similar to those shown on pages of this book devoted to the subject of starters.

Other  
Starters







# CRUISER AND RUNABOUT TYPE

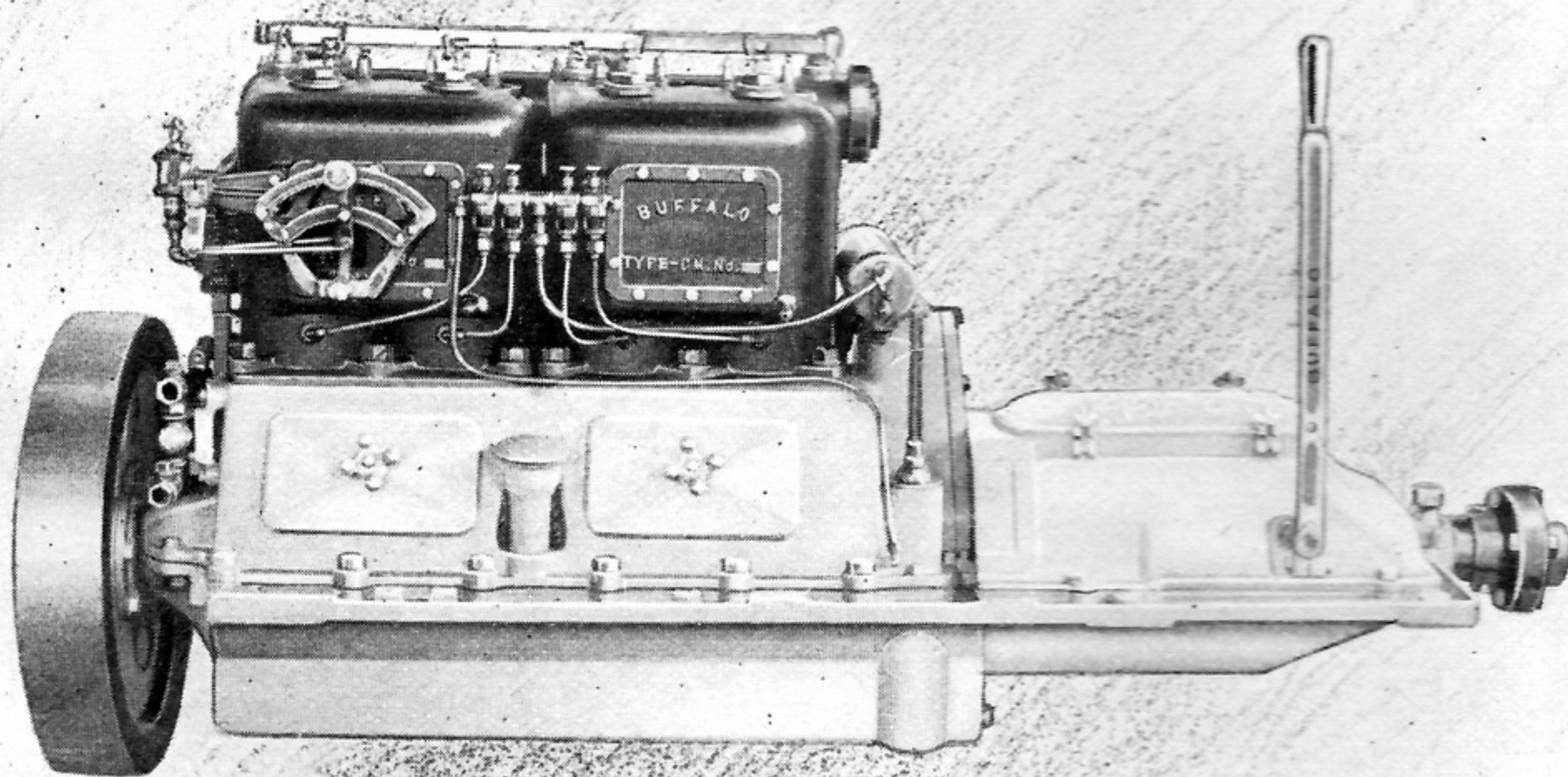
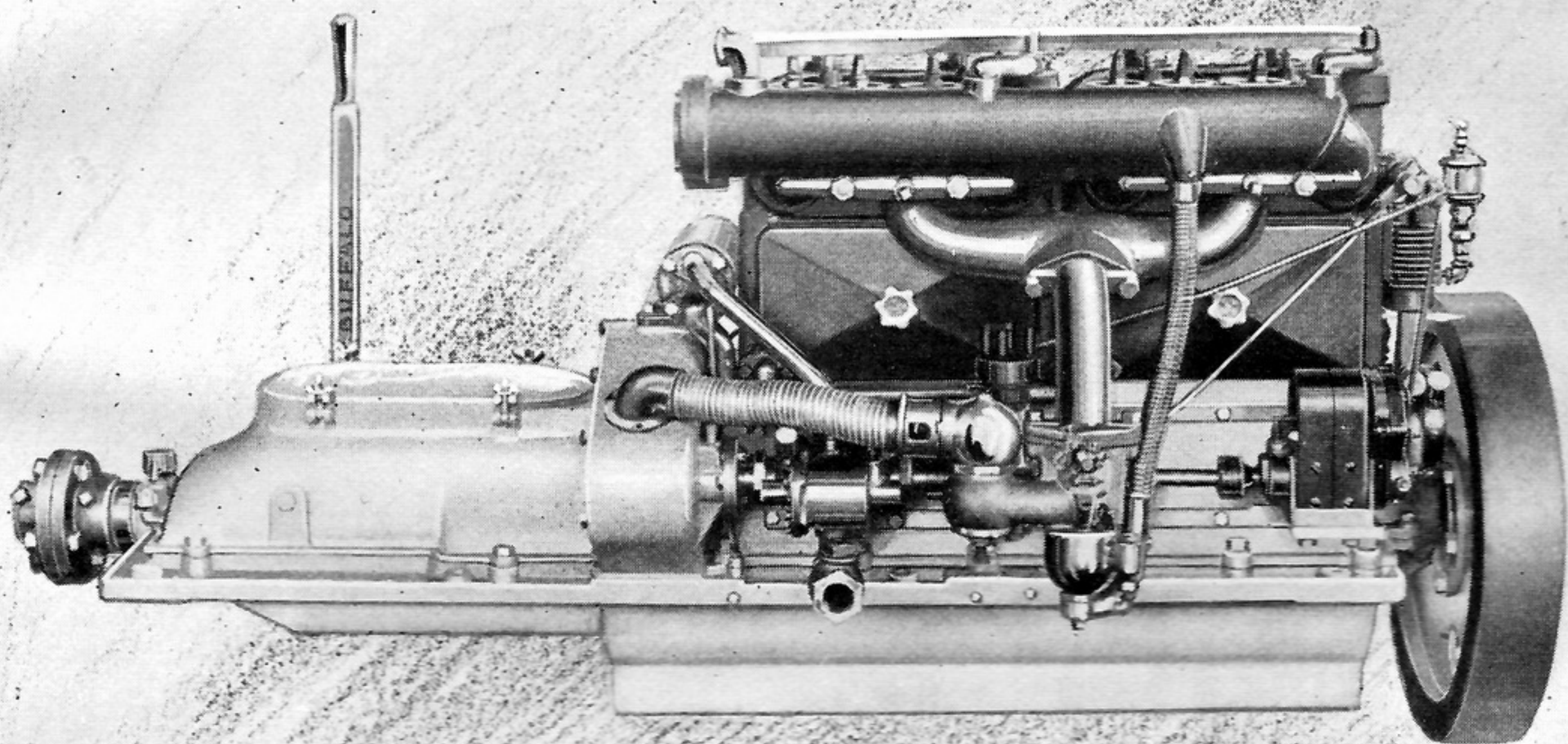
16-20 H. P.

25-30 H. P.

Cylinders.....	4.....	4.....
Bore.....	3 3/4".....	4 3/4".....
Stroke.....	5".....	5".....
Piston displacement.....	220.89 cu. ins.....	354.41 cu. ins.....
Weight with reverse gear (aluminum base).....	560 lbs.....	745 lbs.....
Weight with reverse gear (iron base).....	710 lbs.....	929 lbs.....
Diameter of flywheel.....	16".....	17 1/2".....
Diameter of crankshaft.....	1 3/4".....	1 7/8".....
Height, center of crank up.....	22 7/8".....	23 7/8".....
Distance, center of crank down.....	8 1/8".....	8 1/8".....
Width of space between foundation blocks.....	13".....	13 1/2".....
Width of base over all.....	16".....	17".....
Length of motor over all.....	56 7/16".....	59 9/16".....
Width over all { Port side.....	8".....	8 1/2".....
{ Starboard side.....	11 7/8".....	14 1/2".....
Length of foundation of reverse gear motor.....	45 7/16".....	46 1/2".....
Length of foundation of single motor.....	29 1/4".....	32 1/4".....
Speed { Normal.....	800 r. p. m.....	800 r. p. m.....
{ Minimum.....	100 r. p. m.....	100 r. p. m.....
Diameter of exhaust pipe.....	2".....	2".....
Diameter of propeller shaft.....	1".....	1 1/4".....
Diameter of propeller.....	16" 3-blade.....	18" 3-blade.....
Length of shaft furnished.....	10 ft.....	10 ft.....
Starting device.....	Crank and rear starter.....	Crank and rear starter.....
Wire furnished { Primary.....	Necessary.....	Necessary.....
{ Secondary.....	Necessary.....	Necessary.....
Size sea cock.....	3/4" i. p. s.....	1" i. p. s.....
Diameter of pipe for fuel connection.....	1/8" i. p. s.....	1/8" i. p. s.....
Lubrication.....	Constant level splash.....	Constant level splash.....
Water pump (gear type).....	3/4" intake.....	1" intake.....
Carburetor.....	1".....	1 1/4".....
Shaft coupling.....	Flange.....	Flange.....
Distance center of shaft down to top of foundation blocks.....	15/16".....	15/16".....
Distance between foundation bolts.....	14 3/4".....	15 5/8".....

For further engine measurements, see page 30







# CRUISER AND RUNABOUT TYPE

	40-60 H. P.	50-80 H. P.
Cylinders.....	4.....	4.....
Bore.....	5 1/2".....	6 3/4".....
Stroke.....	7".....	9".....
Piston displacement.....	665.23 cu. ins.....	1288.25 cu. ins.....
Weight (aluminum).....	1430 lbs.....	2100 lbs.....
Weight (iron).....	1730 lbs.....	2600 lbs.....
Diameter of flywheel.....	{ 20".....	26".....
	{ 22".....	28".....
Diameter of crankshaft.....	2 3/8".....	2 3/4".....
Height, center of crank up.....	25".....	30 3/4".....
Distance, center of crank down.....	8 1/4".....	9 3/4".....
Width of space between foundation blocks.....	14 3/4".....	18 1/4".....
Width of base over all.....	19 11/16".....	23 1/2".....
Length of motor over all.....	76 7/8".....	88".....
Length of foundation of reverse gear motor.....	61 7/16".....	70 5/8".....
Length of foundation of single motor.....	38".....	45 3/8".....
Width over all { Port side.....	9 1/2".....	11 3/4".....
	{ Starboard side.....	23 9/16".....
Speed { Normal.....	600 to 900 r. p. m.....	500 to 800 r. p. m.....
	{ Minimum.....	100 r. p. m.....
Diameter of exhaust pipe.....	2 1/2".....	3".....
Diameter of propeller shaft.....	1 1/2" or 1 3/4".....	1 3/4" or 2".....
Diameter of propeller.....	22" to 26".....	24" to 28".....
Length of shaft furnished.....	10 ft.....	10 ft.....
Starting device.....	Ratchet and lever.....	Ratchet and lever.....
Wire furnished { Primary.....	Necessary.....	Necessary.....
	{ Secondary.....	Necessary.....
Size sea cock.....	1".....	1 1/4".....
Diameter of pipe for fuel connection.....	3/8" i. p. s.....	3/8" i. p. s.....
Lubrication.....	{ Constant level splash and	Constant level splash and
	{ stream feed.....	stream feed.....
Water pump (gear).....	1" intake.....	1 1/4" intake.....
Carburetor.....	2".....	2 1/2".....
Air pump (plunger type).....	3/8" i. p. s.....	3/8" i. p. s.....
Coupling.....	Flange.....	Flange.....
Distance, center of shaft down to top of foundation blocks.....	1 1/8".....	1 1/2".....
Distance between foundation bolts.....	17 3/8".....	21".....

For further engine measurements, see page 30



## Heavy Duty Models

For Sturdy  
Boats

Buffalo Heavy Duty Engines are known the world over. Wherever there is navigable water they are powering work boats or pleasure boats of the heavier type, giving steady, reliable service under all conditions day after day.

Reliable  
Service

The Buffalo Heavy Duty models are the sturdy work horses of the Buffalo line. Endurance, steady, reliable service and economy are the points which are given first place in their designing rather than light weight or beautiful lines, and the result is that Buffalo Heavy Duty Engines are usually the choice of the boat owners who have real work to do. These engines are powering boats of so many kinds that it would be next to impossible to name them all, every kind from a ferry boat used to carry trolley cars across the Ohio River to sturdy little open launches. All kinds of work boats such as tugs, fishing boats, small freighters, oyster dredges, cannery tenders, seine boats and passenger boats, to say nothing of the thousands of beautiful yachts and cruisers which have found their ideal power plant in a Buffalo Heavy Duty engine. These engines are also used as auxiliary power on large ships with great success.

Powering  
Car Ferry

Auxiliary  
Power

## Built For Strength

Strength

Buffalos of the Heavy Duty type are liberal in weight to meet the need of strength and good service called for by the kind of work the engine is required to do, but they are not need-



lessly heavy. The idea is simply to supply the sturdiest possible kind of an engine and whatever weight is needed to produce this result is put into it.

The Buffalo Heavy Duty Type consists of nine sizes as shown in detail elsewhere in this book.

These engines are built in two, four and six cylinders. With the exception of two sizes they all follow the same general style, what few minor differences there are being due to the addition of more cylinders or the particular requirements of an engine of one size as distinguished from those of another. The two sizes which differ from the general type are the four and six cylinder models with 10 in. bore and 12 in. stroke rated at 85-100 H. P. and 125-150 H. P. These two models have so many points in which they differ from the regular Heavy Duty line that it will be necessary to describe them separately.

Two Styles

### Heavy Duty Models Below 85 H. P.

The cylinders are cast in pairs from close grained gray iron, machined, heat treated, finish machined and water tested. They are supplied with large inspection panels for cleaning the water jackets.

Cylinders

The base and crank chamber are of iron. There are unusually long crankshaft bearings, a point which is of great importance in work of the kind these engines are intended for.

Base and  
Crank  
Chamber



### Crankshaft

The crankshaft is made of a special alloy steel, a large factor of safety being allowed. All bearings and crank pins are true to size so that the crankshaft is interchangeable.

### Cooling System

A complete system of water jacketing keeps the engine properly cooled at all times, water for cooling being supplied through a bronze plunger pump running at camshaft speed. The water jacketed exhaust manifold is fitted with a chamber from which heated air is supplied to the carburetor.

### Pistons and Connecting Rods

The pistons are of gray iron, machined, heat treated and carefully balanced. The rings are above the piston pin. The connecting rods are drop forged from O. H. steel of "H" section fitted with detachable bronze boxes, babbitt lined and have bronze bushings at the upper ends. Piston pins are of steel, hardened and ground and held in place by lock rings passing around the ends. The connecting rod bolts are of alloyed stock heat treated.

### Lubrication

Lubrication is by means of multiple feed mechanical oiler attached to the cylinder. By this oiler oil is forced to every point where it is needed, through separate feed tubes, each feed tube having a separate pump. In this way all cylinders and bearings are thoroughly lubricated, the oil flowing back into the base from where it is returned to the oiler by a pump. Lubrication to crank pins is by means of Buffalo ring oilers.



### Various Points of Construction

The Heavy Duty Models, like the Cruiser and Runabout Type, are supplied with a double system of ignition, a battery distributor system for starting and magneto for running. These two systems are entirely separate even to having different spark plugs, so if one system gets out of order the other is there to fall back upon. Make-and-break ignition can be supplied if preferred.

Ignition

The reverse gear is of the expanding wing type for the go-ahead, the back up being effected by a planetary gear system operated by a babbitted band outside the drum. The planetary gears are of steel, bronze bushed, running on hardened and ground steel gear pins. The whole reverse gear is covered with an easily removable oil-tight hood.

Reverse Gear

The compression relief cocks for easy starting on the 13-15 H. P., 20-22 H. P., 26-30 H. P., 40-45 H. P. and 60-70 H. P. are piped together so no fumes can escape into the cabin.

Compression  
Relief Cocks

The Heavy Duty Models of this type are equipped with a bronze plunger water pump, bronze plunger bilge pump, and a bronze pump for returning the oil from the base to the oiler

Pumps

The regular equipment for these models includes a ratchet and lever for starting, but air starter can be supplied on all but the two cylinder models, and all models can be equipped with electric starters.

Starting  
Device



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## The Buffalo Book

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**Flywheel**      The flywheel is balanced by the running balance method.

**Governor**      The four and six cylinder Heavy Duty models are equipped with a horizontal governor driven by helical gears, all parts being enclosed in an oil-tight casing. This governor is connected to the throttle lever at the forward end, and by means of it the engine speed is regulated so that the governor will govern at practically the speed the engine is running when the clutch is disengaged.

### 85-100 and 125-150 H. P. Heavy Duty Models

**Cylinders**      Cylinders are cast in pairs, from close grained gray iron, and have removable heads.

**Base and Crank Chamber**      The lower half of the base containing the crankshaft and bearings is of cast steel, the reverse gear, which is of the multiple disc type, being carried on angle irons and enclosed on the under side by a brass oil pan, as is also the entire engine base. The crank case is made up of cast steel sections and has large inspection panels.

**Crankshaft**      The crankshaft and connecting rods are hammer forged. The connecting rods are provided with adjustable bronze bearings both on the crankshaft and piston pin, the crankshaft bearing being babbitt lined.



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## The Buffalo Book

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The pistons are similar to those used on other Buffalo Heavy Duty models. Piston pins are of steel, hardened and ground and held in place by a lock ring passing around the end.

Pistons

The valves and valve springs while enclosed are easily accessible by plates and inspection plugs. The valve stems are of carbon steel fused into gray iron heads. They are operated by hardened and ground steel cams, keyed and taper pinned to the camshaft, and operated in connection with the Buffalo type of rocker arm. The valve timing gears are of steel with helical teeth, the intermediate gear being adjustable.

Valves

The camshaft is of forged steel with flange forged integral to the shaft for carrying the camshaft gear.

Camshaft

Lubrication is carried on by a force feed mechanical oiler and in a general way is similar to that used on the other Buffalo Heavy Duty models.

Lubrication

There is a double high tension system of ignition, a battery distributor system for starting and magneto for running. These two systems are entirely separate even to different sets of plugs.

Ignition

Both these models include an air starting device as their regular equipment. There is also an auxiliary hand starting device.

Starting  
Device



## Parts as Numbered on Blueprint of Heavy-Duty Motor— Sectional View

46—Reverse gear shell	120—Crankshaft	201—Valve push rod adjusting screw lock nut
47—Reverse gear shell bushing	121—Tailshaft bearing cap	202—Valve push rod adjusting screw
48—Reverse gear shell cover	122—Center and rear bearing cap	203—Valve
49—Reverse gear shell cover screw	123—Forward bearing cap	205—Valve spring
50—Reverse gear shell cover bushing	126—Grease cup	206—Valve stem guide
51—Planetary gear pin	129—Flywheel	207—Valve spring washer
52—Planetary gear pin collar	131—Starting ratchet	208—Exhaust valve plug
53—Planetary gear pin dowel screw	134—Starting ratchet guard	215—Cylinder inspection plug
54—Long planetary gear	138—Crankchamber	222—Inlet valve plug
55—Long planetary gear bushing	141—Magneto panel	238—Timer shaft bevel gear
56—Short planetary gear	143—Crankchamber panel screw	240—Timer shaft
57—Short planetary gear bushing	144—Crankchamber base screw	242—Timer shaft bevel gear on camshaft
58—Bushed gear on crankshaft	145—Cylinder	
59—Bushed gear bushing	149—Cylinder stud	249—Spark shifting lever
60—Bushed gear key	150—Cylinder stud nut	285—Oil rings
61—Tailshaft gear	151—Cylinder uprights	286—Oil ring screws
62—Tailshaft gear key	154—Cylinder upright nut	293—Exhaust manifold
63—Reverse gear wings	155—Piston	294—Exhaust manifold rear section
64—Release spring for wings	156—Piston rings	296—Water jacket connector for exhaust manifolds
65—Reverse gear dog	157—Piston pin	301—Gas intake manifold
66—Reverse gear dog set screw	158—Piston pin set screw	303—Governor throttle valve
67—Reverse gear dog key	159—Piston pin set screw cotter pin	306—Carburetor
68—Reverse gear cam pin	160—Connecting rod	310—Water overflow manifold
70—Hardened steel plate for cam pin	161—Upper connecting rod bushing	311—Water inlet manifold
74—Cam pin lever	162—Upper connecting rod bolt	321—Water pump
75—Cam pin lever key	163—Upper connecting rod bolt nut	336—Air pump plunger pin
81—Reverse gear bobbin	164—Connecting rod bearing (upper half)	337—Air pump body
82—Brass shifting yoke	165—Connecting rod bearing (lower half)	338—Air pump plunger
85—Clutch fork	166—Lower connecting rod bolt	340—Air pump eccentric strap
96—Reverse band	167—Lower connecting rod bolt nut	347—Air pump discharge valve cap
106—Oil filling plug for reverse gear	169—Crankshaft 2-1 gear	348—Air pump discharge valve
107—Tailshaft	170—Crankshaft 2-1 gear key	349—Air pump discharge valve spring
108—Reverse gear hood	171—Intermediate 2-1 gear	350—Magneto
109—Set collar	172—Intermediate gear bushing	351—Magneto gear on camshaft
110—Set collar screw	173—Intermediate gear stud	357—Magneto gear guard
111—Shaft coupling for tailshaft	174—Intermediate gear stud nut	366—Distributor
112—Shaft coupling for propeller shaft	185—Valve camshaft	424—Piston pin lock ring
113—Flange coupling bolt	186—Valve cam	425—Bilge pump
114—Flange coupling bolt nut	190—Valve lifter lever	437—Throttle lever
115—Flange coupling set screw	191—Valve lifter lever roller	471—Governor control lever
116—Flange coupling key	197—Valve push rod	
117—Ball thrust collar	198—Valve push rod bushing	
118—Reverse gear base		
119—Reverse gear base drain plug		

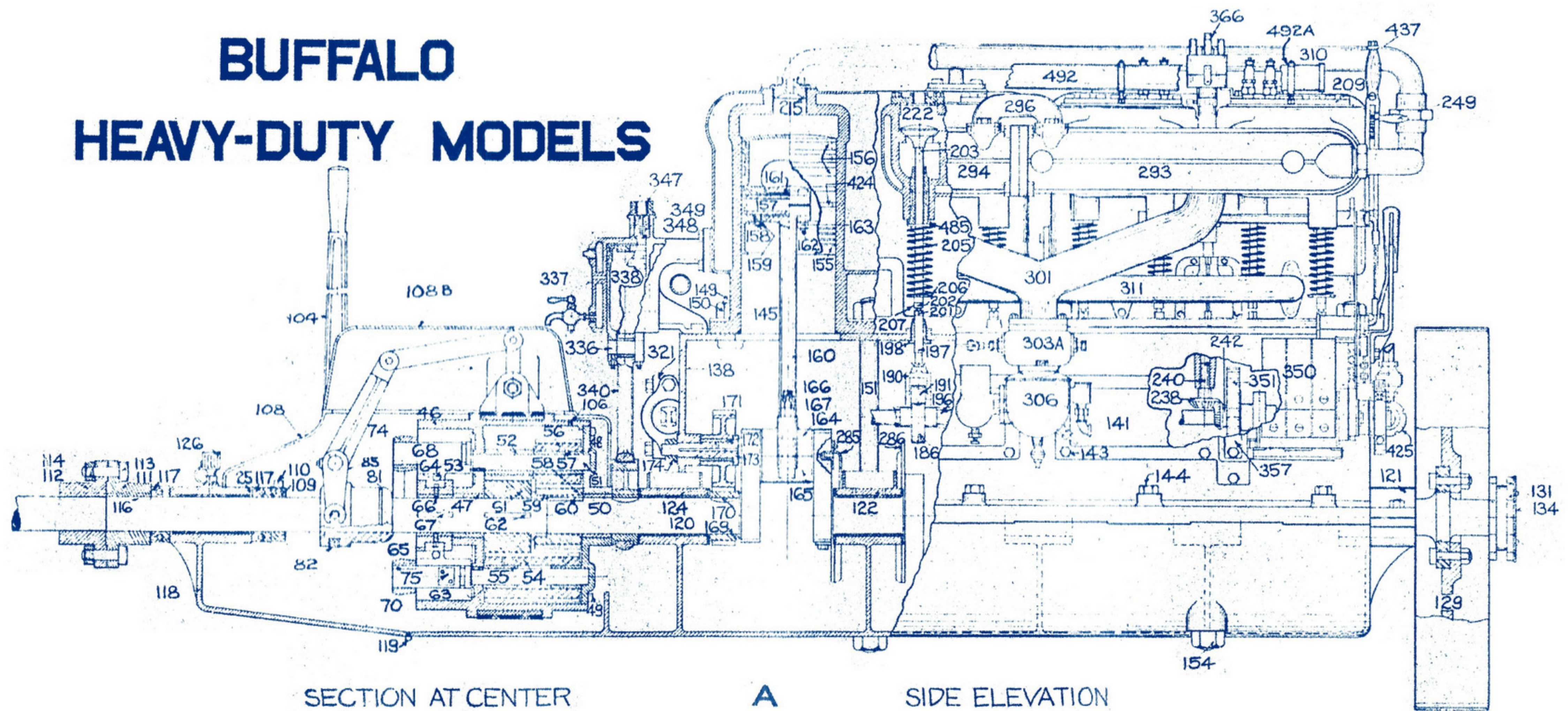
## Parts as Numbered on Blueprint of Cruiser and Runabout Engine—Sectional View

16-20 H. P. and 25-30 H. P.

83A—Reverse shaft bracket	117—Ball thrust collar	125—Tailshaft bearing cap
104—Reverse lever	119B—Oil pan panel	126—Grease cup
108—Reverse gear hood	120—Crankshaft	127A—Base cap bolt
109—Set collar	120A—Packing gland	128—Base cap bolt castled nut
111—Shaft coupling (tailshaft flange)	121—Forward bearing cap	129—Flywheel
112—Shaft coupling (propeller shaft flange)	123—Short center bearing cap	129A—Flywheel bolt
113—Bolt for shaft coupling	123A—Center bearing cap babbitt	130A—Flywheel bolt nut
114—Bolt nut for shaft coupling	124—Rear bearing cap	134—Starting ratchet guard
	124A—Forward bearing cap babbitt	



# BUFFALO HEAVY-DUTY MODELS

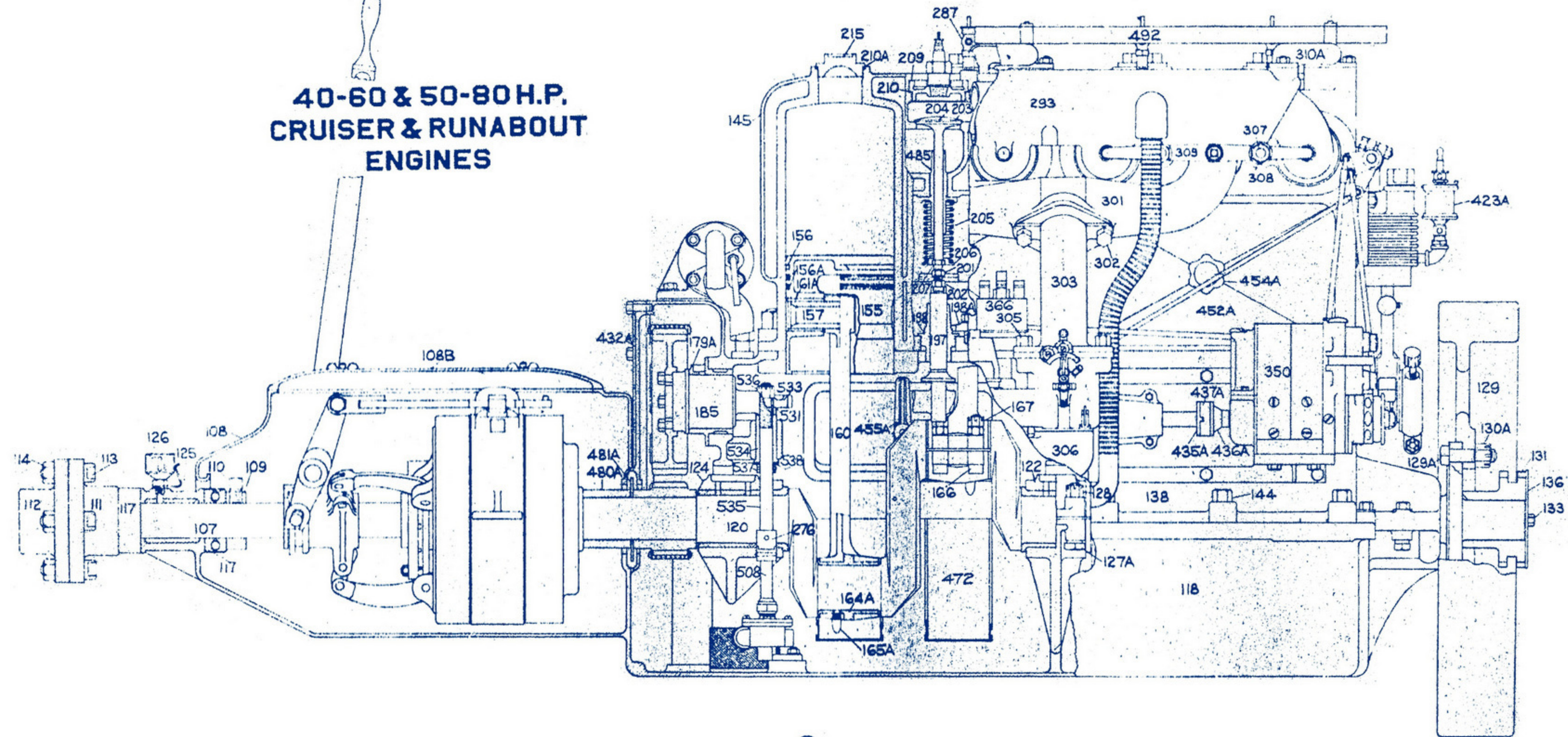




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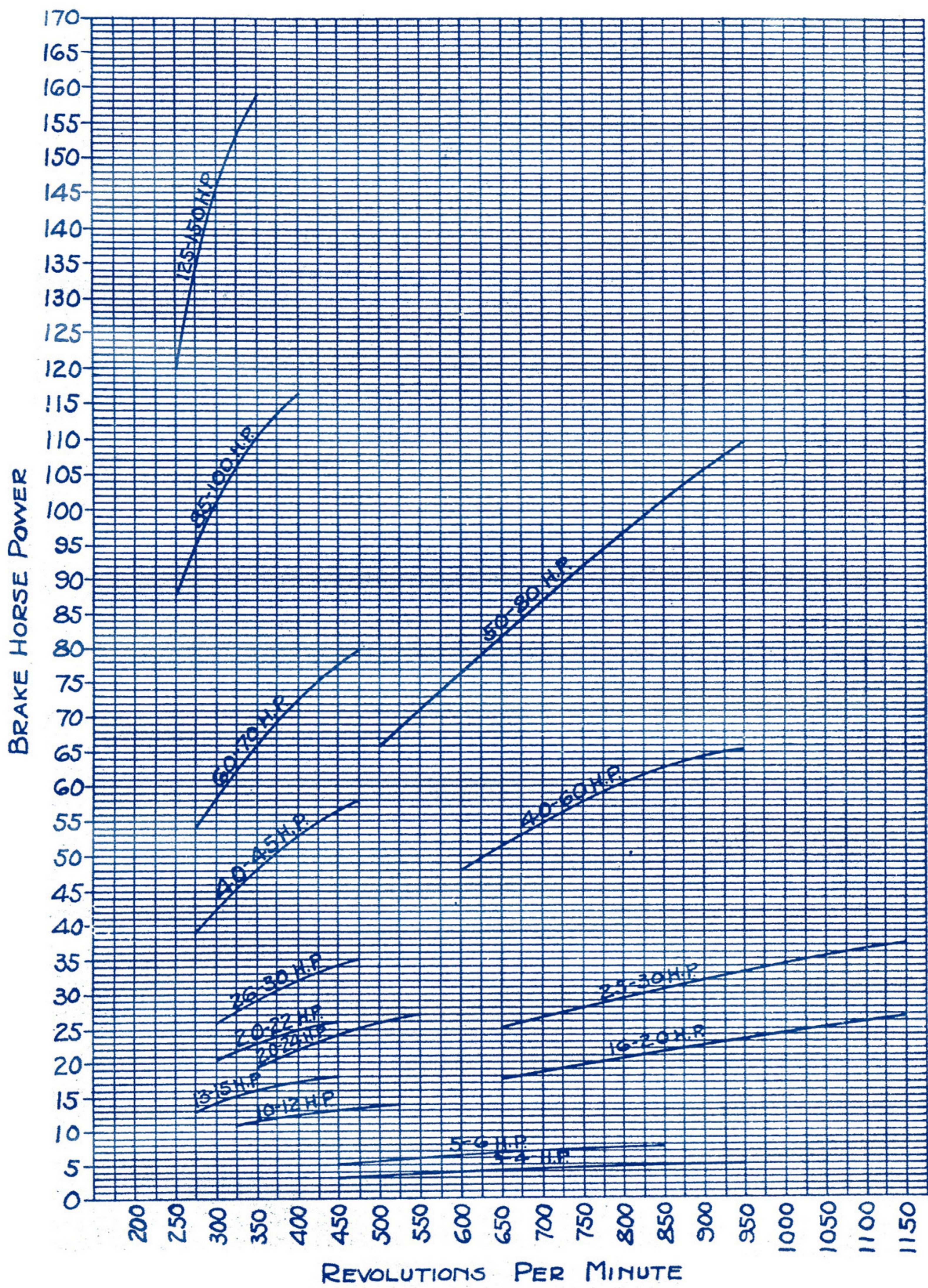


**40-60 & 50-80 H.P.  
CRUISER & RUNABOUT  
ENGINES**



C







# The Buffalo Book

(Continued from page 20)

## Parts as Numbered on Blueprint of Cruiser and Runabout Engine—Sectional View

16-20 H. P. and 25-30 H. P.

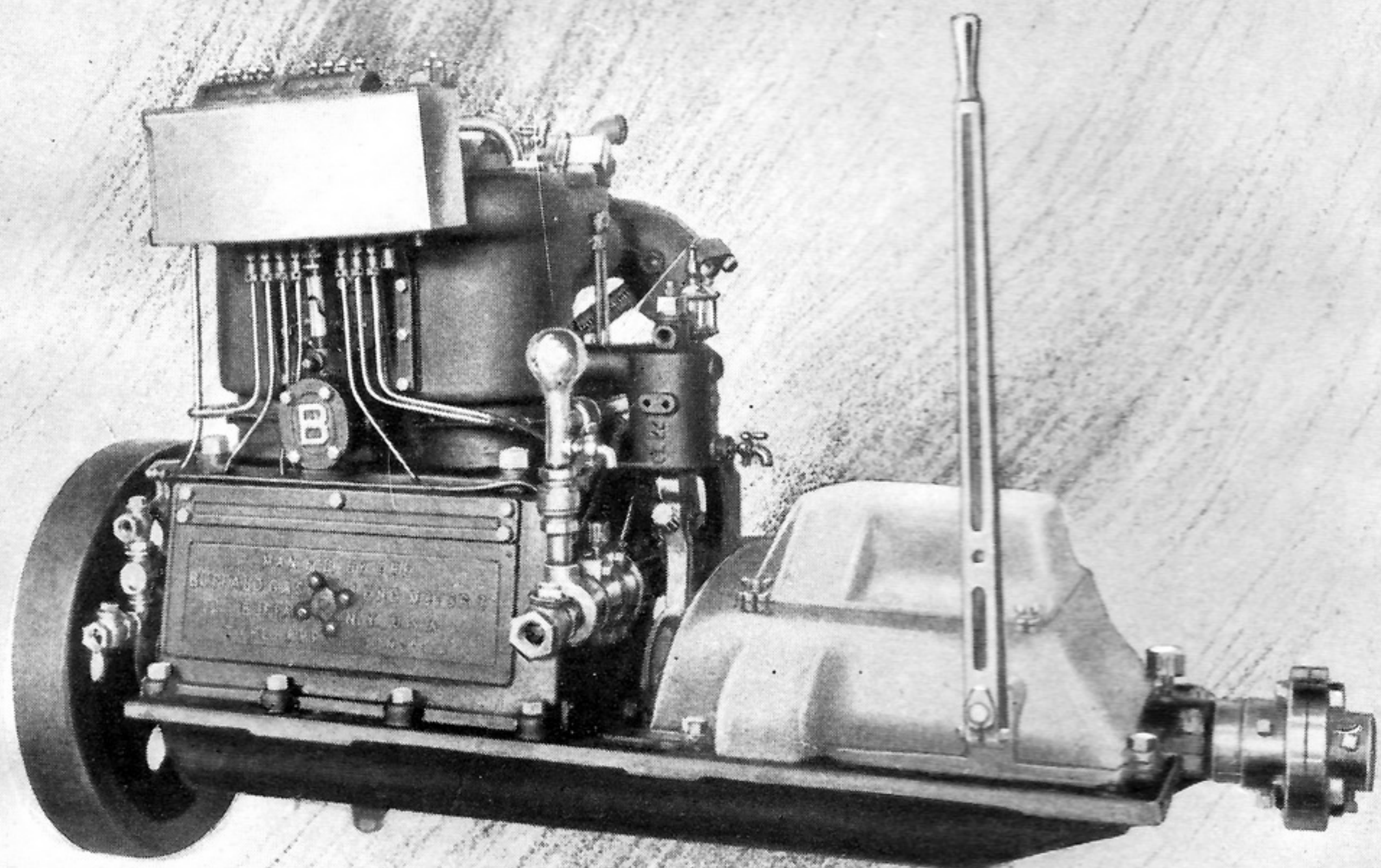
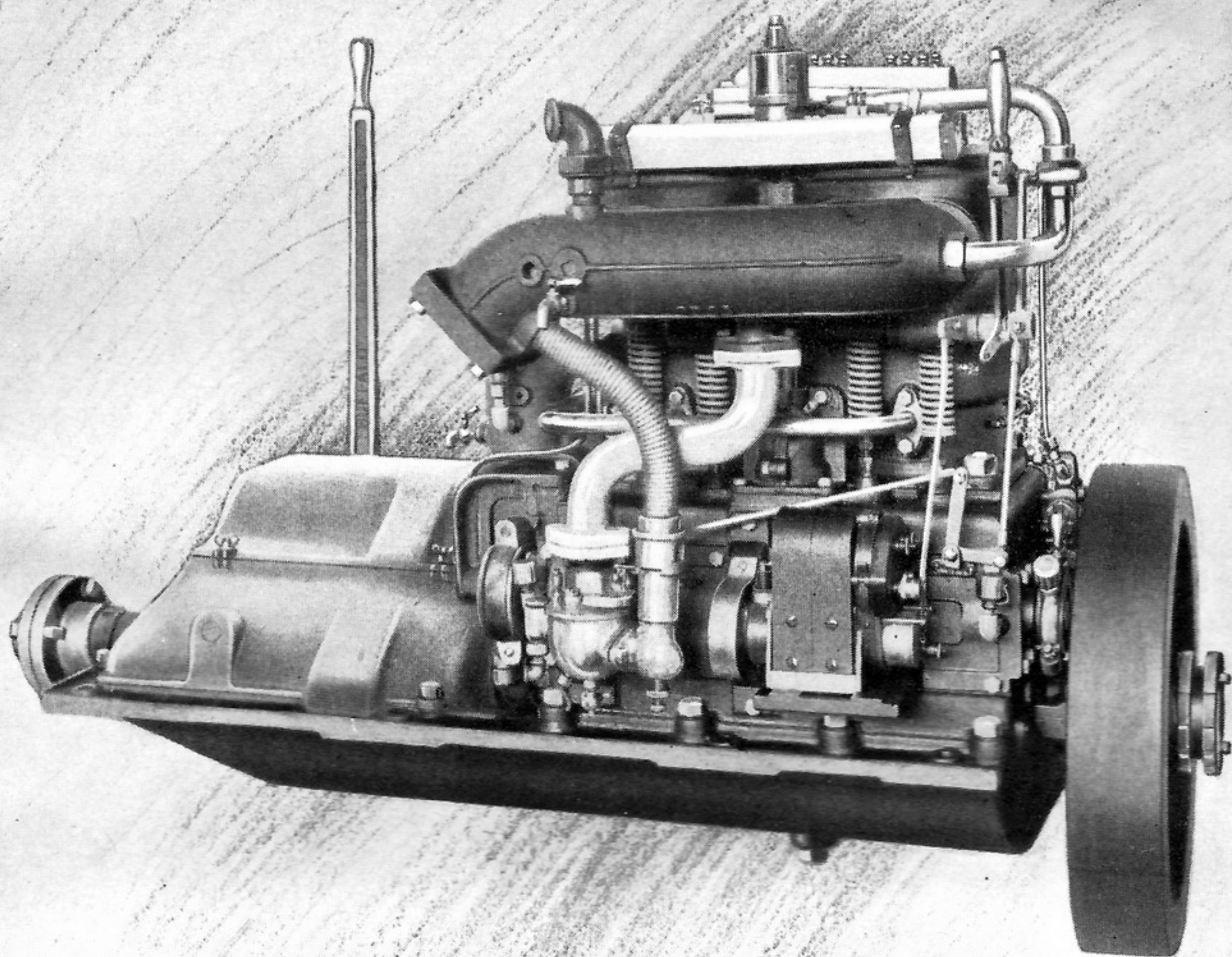
145—Cylinder	185B—Drive gear for oil pump	293—Exhaust manifold
155—Piston	186—Inlet valve cam	301—Gas inlet manifold
156—Piston rings	186A—Oil pump drive gear key	307—Inlet and exhaust manifold clamp stud
156A—Narrow steel piston rings	187—Exhaust valve cam	308—Inlet and exhaust manifold clamp stud nut
157—Piston pin	197—Valve push rod	309—Inlet and exhaust manifold clamp
160—Connecting rod	198—Valve push rod guide	311—Water inlet manifold
162—Upper connecting rod bolt	198A—Valve push rod guide clamp	432A—Gear case panel
164A—Connecting rod die cast bearing	201—Valve push rod adjusting screw	452A—Valve enclosing plate
165A—Connecting rod splash pin	202—Valve push rod adjusting screw lock nut	454A—Valve enclosing plate nut
166—Lower connecting rod bolt	203—Inlet valve	455A—Crankchamber panel clamp
169—Crankshaft gear	204—Exhaust valve	485—Valve stem guide
170—Key for crankshaft gear	205—Valve spring	537—Oil pump drive shaft set collar
175A—Camshaft gear attaching screw	206—Valve spring collar	538—Oil pump drive shaft thrust washer
179A—Rear camshaft bearing	207—Valve spring split washer	
180A—Forward camshaft bearing	210—Valve plug gasket	
181A—Center camshaft bearing	210A—Cylinder inspection plug gasket	
185—Valve camshaft	215—Cylinder inspection plug gasket	
185A—Camshaft cap		

## Parts as Numbered on Cruiser and Runabout Engine—Sectional View

40-60 H. P. and 50-80 H. P.

107—Tailshaft	160—Connecting rod	307—Inlet and exhaust manifold clamp stud
108—Reverse gear hood	161A—Piston pin bushing	308—Inlet and exhaust manifold clamp stud nut
108B—Reverse gear hood cover	164A—Connecting rod die cast bearing	309—Inlet and exhaust manifold clamp
109—Set collar	165A—Connecting rod splash pin	310A—Combination water overflow and wire tube support
110—Set screw for set collar	166—Lower connecting rod bolt	350—Magneto
111—Shaft coupling (tailshaft flange)	167—Lower connecting rod bolt nut	366—Distributor
112—Shaft coupling (propeller shaft flange)	179A—Rear camshaft bearing	423A—Oil cup
113—Bolt for shaft coupling	185—Valve camshaft	432A—Gear case panel
114—Bolt nut for shaft coupling	197—Valve push rod	435A—Magneto coupling (male half)
117—Ball thrust collar	198—Valve push rod guide	436A—Magneto coupling (female half)
118—Base (reverse gear)	198A—Valve push rod guide clamp	437A—Magneto coupling (center block)
120—Crankshaft	201—Valve push rod adjusting screw	452A—Valve enclosing plate
122—Long center bearing cap	202—Valve push rod adjusting screw lock nut	454A—Valve enclosing plate nut
124—Rear bearing cap	203—Inlet valve	455A—Crankchamber panel clamp
125—Tailshaft bearing cap	204—Exhaust valve	472—Connecting rod splash trough
126—Grease cup	205—Valve spring	480A—Clutch spacing collar
127A—Base cap bolt	206—Valve spring collar	481A—Gear case oil ring
128—Base cap bolt castled nut	207—Valve spring split washer	485—Valve stem guide
129—Flywheel	209—Valve port plug or cover plate	492—Wire tube
129A—Flywheel bolt	210—Valve plug gasket	508—Oil circulating pump shaft
130A—Flywheel bolt nut	210A—Cylinder inspection plug gasket	531—Oil pump spiral gear key
131—Starting ratchet	215—Cylinder inspection plug	533—Oil pump spiral gear (driven)
133—Starting ratchet screw	276—Upright oiler shaft coupling	534—Oil pump drive shaft bushing
136—Starting ratchet cap	287—Priming cup	535—Oil pump drive shaft
138—Crankchamber	293—Exhaust manifold	536—Oil pump drive shaft nut
144—Crankchamber base screw	301—Gas intake manifold	537—Oil pump drive shaft set collar
145—Cylinder	302—Inlet manifold screw	538—Oil pump drive shaft thrust washer
155—Piston	303—Inlet drop pipe	
156—Piston rings	305—Carburetor flange screw	
156A—Narrow steel piston rings	306—Carburetor	
157—Piston pin		







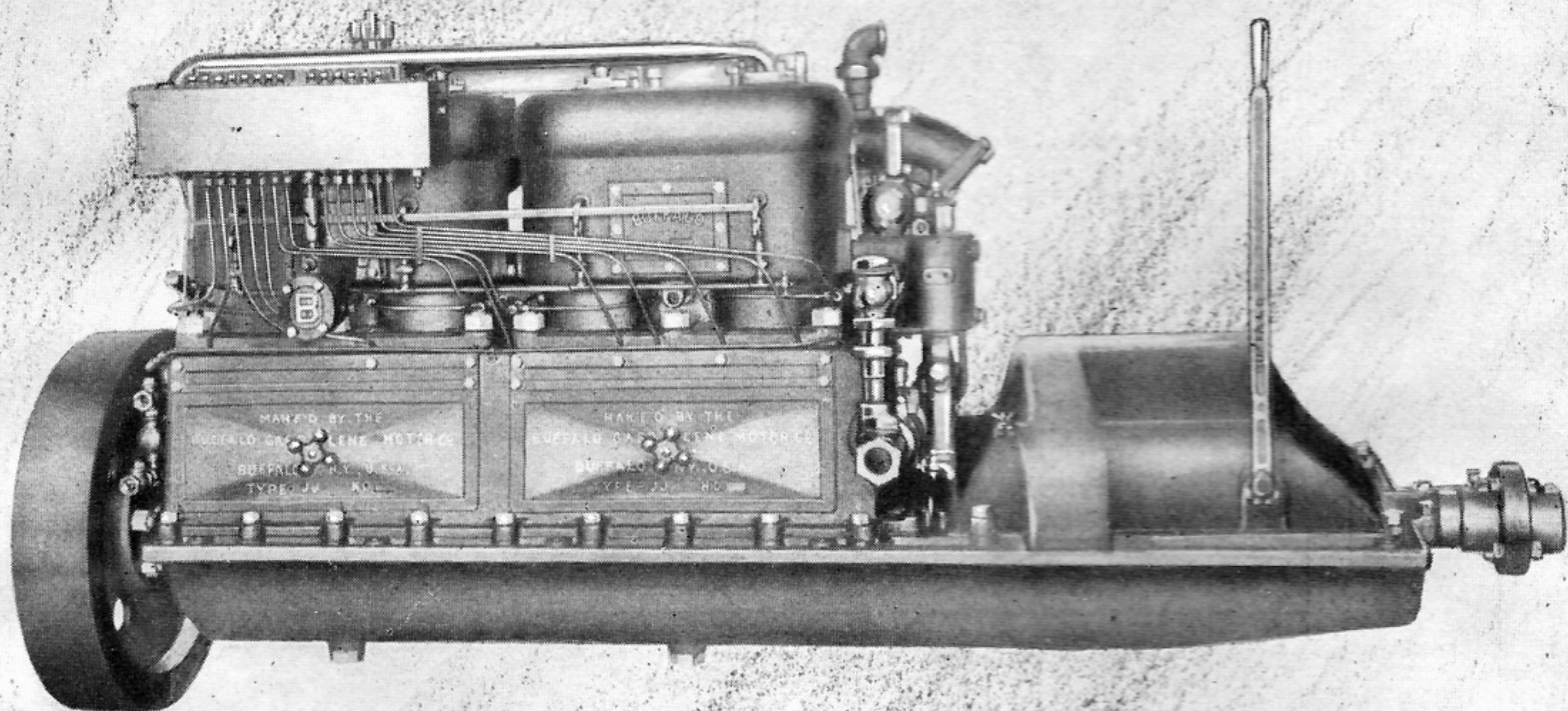
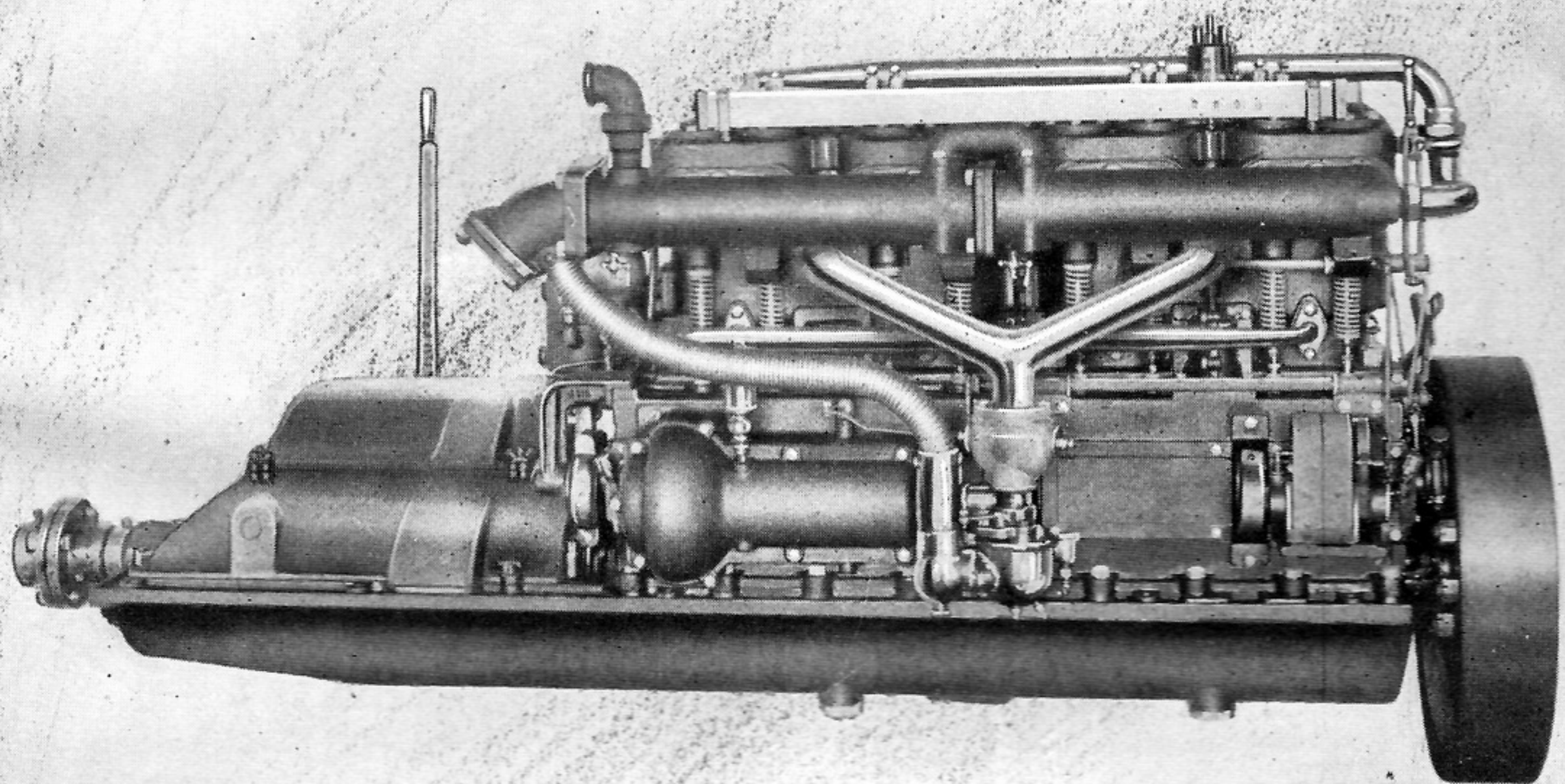
## HEAVY DUTY

	10-12 H. P.	13-15 H. P.	20-22 H. P.
Cylinder.....	2	2	2
Bore.....	5"	6"	7"
Stroke.....	6 1/2"	7 1/2"	9"
Piston displacement.....	255.26 cu. ins.	424.12 cu. ins.	692.72 cu. ins.
Weight with reverse gear.....	1170 lbs.	1400 lbs.	2100 lbs.
Weight less reverse gear.....	920 lbs.	1100 lbs.	1800 lbs.
Diameter of flywheel.....	20"	23"	26"
Diameter of crankshaft.....	2"	2 1/4"	2 1/2"
Height, center of crank up.....	26"	30 1/2"	36"
Distance, center of crank down.....	6 5/8"	8 3/8"	9 1/2"
Width of space between foundation blocks.....	13"	15"	17 1/2"
Width of base over all.....	17 1/2"	20 1/4"	23 1/2"
Length of motor over all.....	60 1/8"	64 7/8"	74 3/4"
Length of foundation of reverse gear motor.....	45"	48 3/8"	55 7/8"
Length of foundation of single motor.....	19 3/4"	22 3/8"	25 7/8"
Width over all { Port side.....	10"	14"	15"
{ Starboard side.....	14 1/2"	16"	19"
Speed { Normal.....	400 r. p. m.	350 r. p. m.	350 r. p. m.
{ Minimum.....	100 r. p. m.	100 r. p. m.	100 r. p. m.
Diameter of exhaust pipe.....	2"	2"	2 1/2"
Diameter of propeller shaft.....	1 1/2"	1 1/2"	1 3/4"
Diameter of propeller.....	{ 22" 3-blade	24" 3-blade	28" 3-blade
	{ 24" 2-blade	26" 2-blade	30" 2-blade
Length of shaft furnished.....	10 ft.	10 ft.	10 ft.
Starting device.....	Ratchet and lever	Ratchet and lever	Ratchet and lever
Wire furnished { Primary.....	Necessary	Necessary	Necessary
{ Secondary.....	Necessary	Necessary	Necessary
Size sea cock.....	3/4"	1"	1 1/4"
Diameter of pipe for fuel connection.....	1/8" i. p. s.	1/8" i. p. s.	1/8" i. p. s.
Lubrication.....	{ 7-feed mechanical lubricator and separate oil return pump	7-feed mechanical lubricator and separate oil return pump	7-feed mechanical lubricator and separate oil return pump
Water pump (plunger type).....	3/4" intake	1" intake	1 1/4" intake
Carburetor.....	1 1/4"	1 1/4"	1 1/2"
Air pump (plunger type).....	3/8" i. p. s.	3/8" i. p. s.	3/8" i. p. s.
Coupling.....	Flange	Flange	Flange
Distance center of shaft down to top of foundation blocks.....	13 1/16"	1/2"	1/2"
Distance between foundation bolts.....	15 1/4"	17 1/2"	21 5/8"

For further engine measurements, see page 33

NOTE—Buffalo Heavy Duty engines are now equipped with Hot-Spot Manifold not shown in the picture.







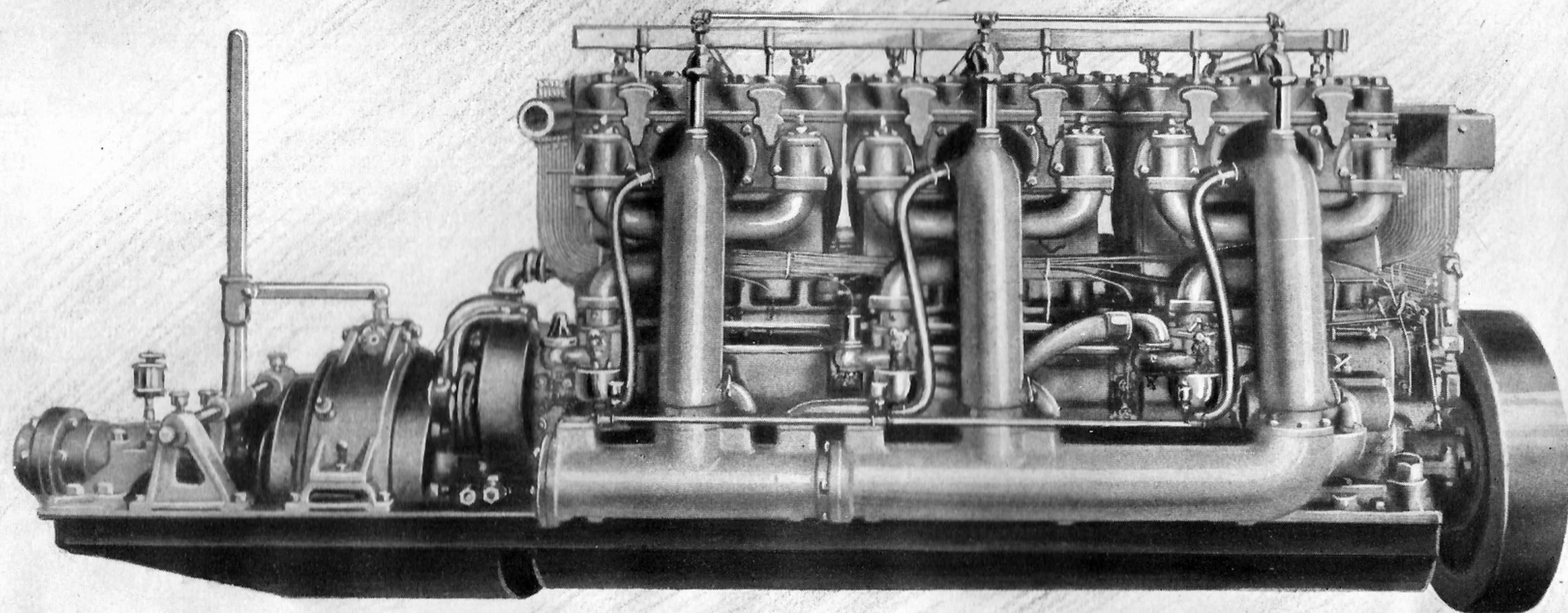
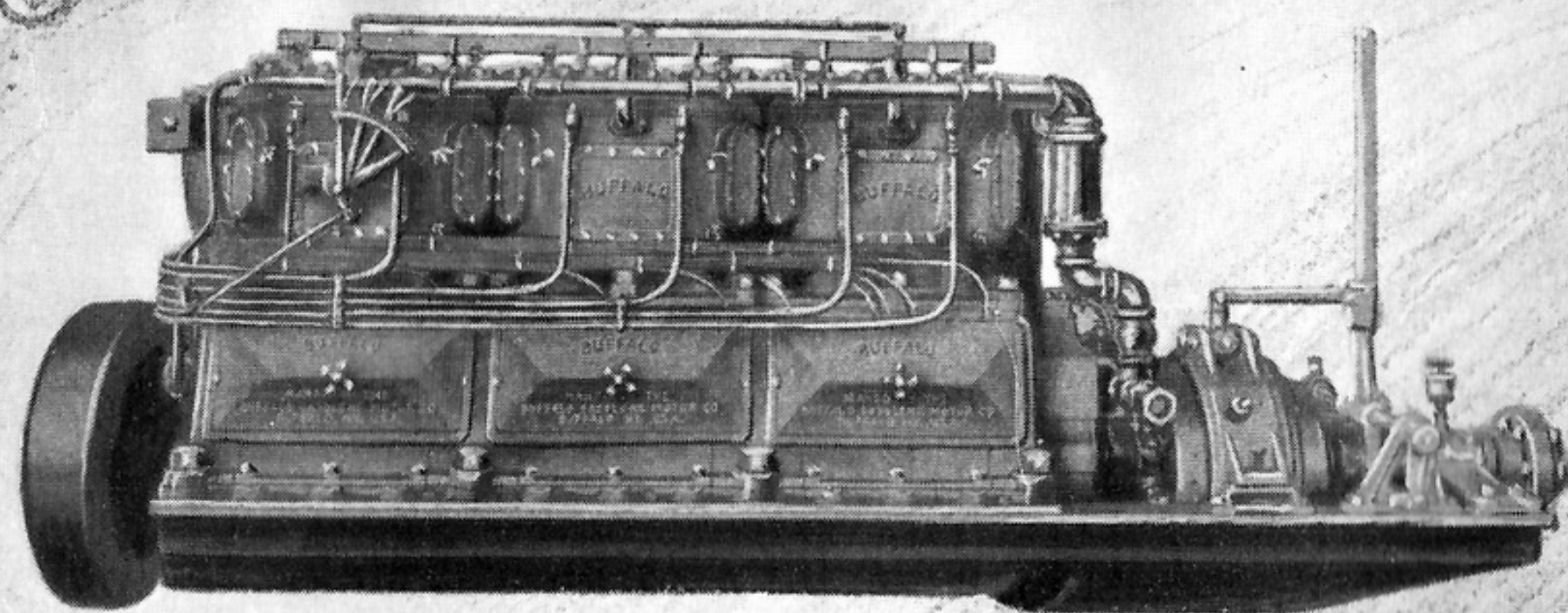
# HEAVY DUTY

	20-24 H. P.	26-30 H. P.	40-45 H. P.	60-70 H. P.
Cylinders.....	4.....	4.....	4.....	6.....
Bore.....	5".....	6".....	7".....	7".....
Stroke.....	6 1/2".....	7 1/2".....	9".....	9".....
Piston displacement.....	510.51 cu. ins.....	848.24 cu. ins.....	1385.44 cu. ins.....	2078.16 cu. ins.....
Weight with reverse gear.....	1960 lbs.....	2525 lbs.....	3655 lbs.....	4850 lbs.....
Weight less reverse gear.....	1600 lbs.....	2100 lbs.....	3000 lbs.....	4125 lbs.....
Diameter of flywheel.....	20".....	24".....	28".....	28".....
Diameter of crankshaft.....	2".....	2 1/4".....	2 1/2".....	2 3/4".....
Height, center of crank up.....	26".....	30 1/2".....	36".....	36".....
Distance, center of crank down.....	6 5/8".....	8 3/8".....	10".....	10".....
Width of space between foundation blocks.....	14 3/4".....	15".....	17 1/2".....	19 1/2".....
Width of base over all.....	19 11/16".....	20 1/4".....	23 1/2".....	25 1/2".....
Length over all.....	85 5/8".....	92".....	102".....	132 1/2".....
Length of foundation of reverse gear motor.....	69 5/8".....	74".....	83 1/2".....	113".....
Length of foundation of single motor.....	39 1/4".....	43 5/8".....	50 1/8".....	74 3/8".....
Width over all { Port side.....	10".....	14".....	15".....	14".....
{ Starboard side.....	14 1/2".....	16".....	19".....	19".....
Speed { Normal.....	400 r. p. m.....	350 r. p. m.....	350 r. p. m.....	350 r. p. m.....
{ Minimum.....	100 r. p. m.....	100 r. p. m.....	100 r. p. m.....	100 r. p. m.....
Diameter of exhaust pipe.....	2" i. p. s.....	2" i. p. s.....	2 1/2" i. p. s.....	3" i. p. s.....
Diameter of propeller shaft.....	1 3/4".....	2".....	2 1/4".....	2 1/2".....
Diameter of propeller.....	{ 28" 2-blade.....	30" 3-blade.....	36" 3-blade.....	40" 3-blade.....
{ 26" 3-blade.....		32" 3-blade.....	38" 3-blade.....	42" 3-blade.....
Length of shaft furnished.....	10 ft.....	10 ft.....	12 ft.....	15 ft.....
Starting device.....	Ratchet and lever.....	Ratchet and lever.....	Ratchet and lever.....	Ratchet and lever.....
Wire furnished { Primary.....	Necessary.....	Necessary.....	Necessary.....	Necessary.....
{ Secondary.....	Necessary.....	Necessary.....	Necessary.....	Necessary.....
Size sea cock.....	1".....	1 1/4".....	1 1/4".....	1 1/2".....
Diameter of pipe for fuel connection.....	1/8" i. p. s.....	1/4" i. p. s.....	1/4" i. p. s.....	3/8" i. p. s.....
Lubrication.....	{ 13-feed mechanical lubricator and separate oil return pump.....	13-feed mechanical lubricator and separate oil return pump.....	13-feed mechanical lubricator and separate oil return pump.....	19-feed mechanical lubricator and separate oil return pump.....
Water pump (plunger type).....	1" intake.....	1 1/4" intake.....	1 1/4" intake.....	1 1/2" intake.....
Carburetor.....	1 1/4".....	1 1/2".....	2".....	Three 1 1/2".....
Air pump (plunger type).....	3/8" i. p. s.....	3/8" i. p. s.....	3/8" i. p. s.....	3/8" i. p. s.....
Coupling.....	Flange.....	Flange.....	Flange.....	Flange.....
Distance center of shaft down to top of foundation blocks.....	1 1/8".....	1/2".....	1/2".....	5/16".....
Distance between foundation bolts.....	17".....	17 1/2".....	20 1/4".....	22 1/4".....

For further engine measurements, see page 32

NOTE—Buffalo Heavy Duty engines are equipped with Hot-Spot Manifold not shown in the picture.







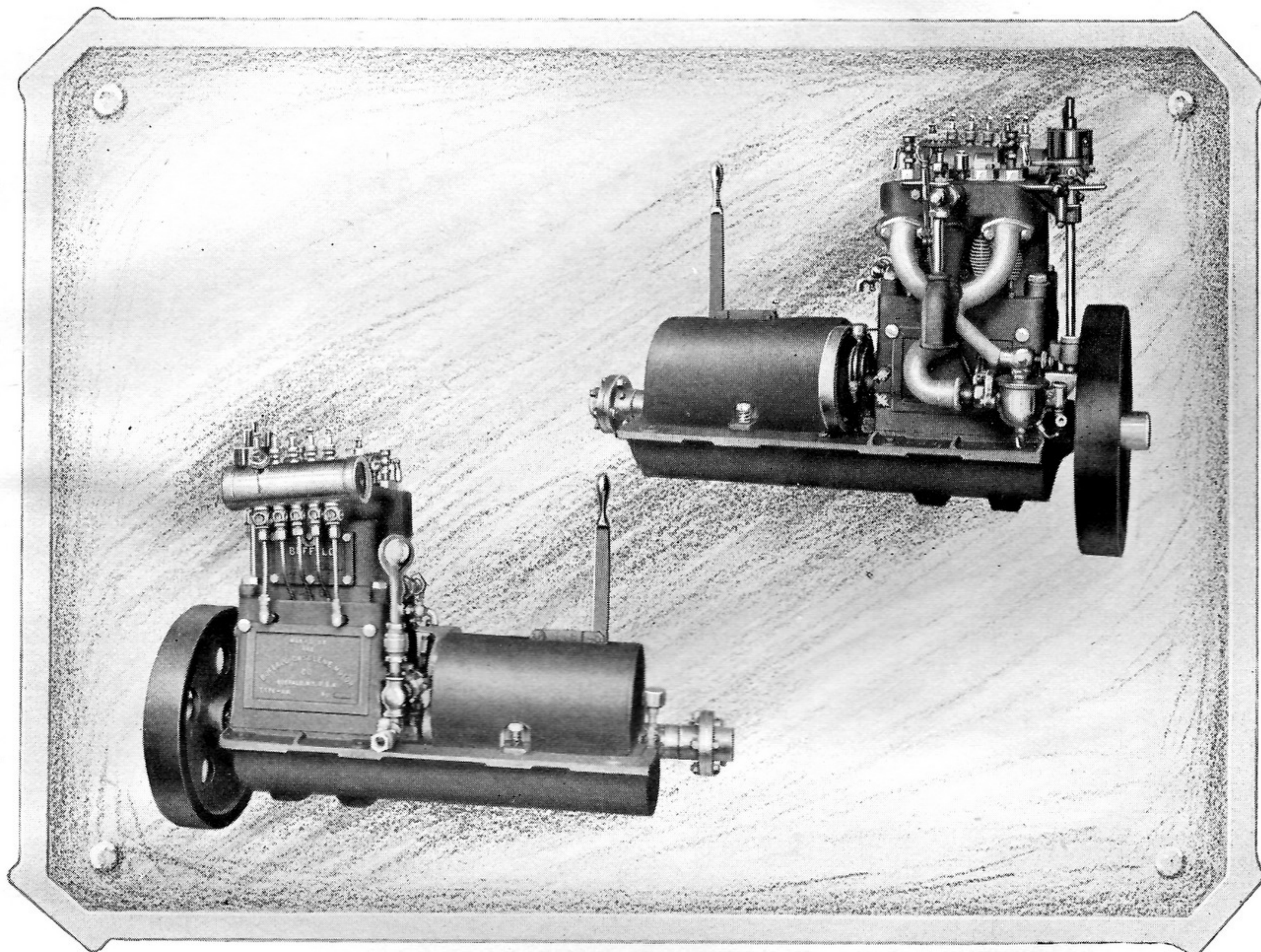
# HEAVY DUTY

	85-100 H. P.	125-150 H. P.
Cylinders.....	4.....	6.....
Bore.....	10".....	10".....
Stroke.....	12".....	12".....
Piston displacement.....	3769.92 cu. ins.....	5654.88 cu. ins.....
Weight with reverse gear.....	8200 lbs.....	12800 lbs.....
Weight less reverse gear.....	6700 lbs.....	10500 lbs.....
Diameter of flywheel.....	34".....	34".....
Diameter of crankshaft.....	4".....	4".....
Height, center of crank up.....	49".....	49".....
Distance, center of crank down.....	14 1/4".....	14 1/4".....
Width of space between foundation blocks.....	25 5/8".....	25 5/8".....
Width of base over all.....	32".....	32".....
Length of motor over all.....	145 1/8".....	176 1/8".....
Length of foundation of reverse gear motor.....	111 1/2".....	142 1/2".....
Length of foundation of single motor.....	66 1/4".....	97 1/4".....
Width { Port side.....	14".....	14".....
{ Starboard side.....	30".....	30".....
Speed { Normal.....	300 r. p. m.....	300 r. p. m.....
{ Minimum.....	100 r. p. m.....	100 r. p. m.....
Diameter of exhaust pipe.....	5" i. p. s.....	5" i. p. s.....
Diameter of propeller shaft.....	2 3/4".....	3".....
Diameter of propeller.....	48" 3-blade.....	55" 3-blade.....
Length of shaft furnished.....	15 ft.....	15 ft.....
Starting device.....	Compressed air self starter	Compressed air self starter
Wire furnished { Primary.....	Necessary.....	Necessary.....
{ Secondary.....	Necessary.....	Necessary.....
Size sea cock.....	2 1/2".....	2 1/2".....
Diameter of pipe for fuel connection.....	1/2" i. p. s.....	1/2" i. p. s.....
Lubrication.....	{ 19-feed mech. lubricator & separate oil return pump	27-feed mech. lubricator & separate oil return pump
Water pump (plunger type).....	2 1/2" intake.....	2 1/2" intake.....
Carburetor.....	3".....	3".....
Shaft coupling.....	Flange.....	Flange.....
Distance center of shaft down to top of foundation blocks.....	3 5/8".....	3 5/8".....
Distance between foundation bolts.....	28".....	28".....

For further engine measurements, see page 31

NOTE—Buffalo Heavy Duty engines are equipped with Hot-Spot Manifold not shown in the picture.





## MEDIUM SPEED

	3-4 H. P.	5-6 H. P.
Cylinders	2	2
Bore	3"	3 1/2"
Stroke	4"	5"
Piston displacement	56.55 cu. ins.	96.21 cu. ins.
Weight with reverse gear	240 lbs.	400 lbs.
Weight less reverse gear	190 lbs.	300 lbs.
Diameter of flywheel	14"	16"
Diameter of crankshaft	1 1/8"	1 1/4"
Height, center of crank up	16 7/8"	19 3/8"
Distance, center of crank down	4 3/4"	4 1/2"
Width of space between foundation blocks	8 3/4"	9"
Width of base over all	11 1/2"	12 1/4"
Length of motor over all	34 3/8"	46 3/4"
Length of foundation of reverse gear motor	25"	28 1/4"
Length of foundation of single motor	9 5/8"	9 3/4"
Width over all { Port side	5 1/2"	6 3/4"
{ Starboard side	9 1/2"	11 1/2"
Speed { Normal	700 r. p. m.	600 r. p. m.
{ Minimum	200 r. p. m.	150 r. p. m.
Diameter of exhaust pipe	1"	1 1/4"
Diameter of propeller shaft	3/4"	1"
Diameter of propeller	{ 14" 2-blade	{ 16" 2-blade
	{ 12" 3-blade	{ 14" 3-blade
Length of shaft furnished	8 ft.	10 ft.
Starting device	Crank	Crank
Wire furnished { Primary	Necessary	Necessary
{ Secondary	Necessary	Necessary
Size sea cock	3/8"	1/2"
Diameter of pipe for fuel connection	1/8" i. p. s.	1/8" i. p. s.
Lubrication	5-feed multiple oiler	7-feed multiple oiler
Water pump (plunger type)	3/8" intake	1/2" intake
Carburetor	3/4"	1"
Shaft coupling	Flange	Flange
Distance center of shaft down to top of foundation blocks	3/8"	1/8"
Distance between foundation bolts	10"	10 1/8"

For further engine measurements, see page 33



## Two Cylinder Medium Speed Models

While the Builders of Buffalos confine their attention mostly to the building of engines of the larger sizes, two small Medium Speed models are offered for the convenience of owners who want even their small boats Buffalo powered. These engines have all the Buffalo qualities. They are similar except for a difference in bore and stroke as shown in the specifications.

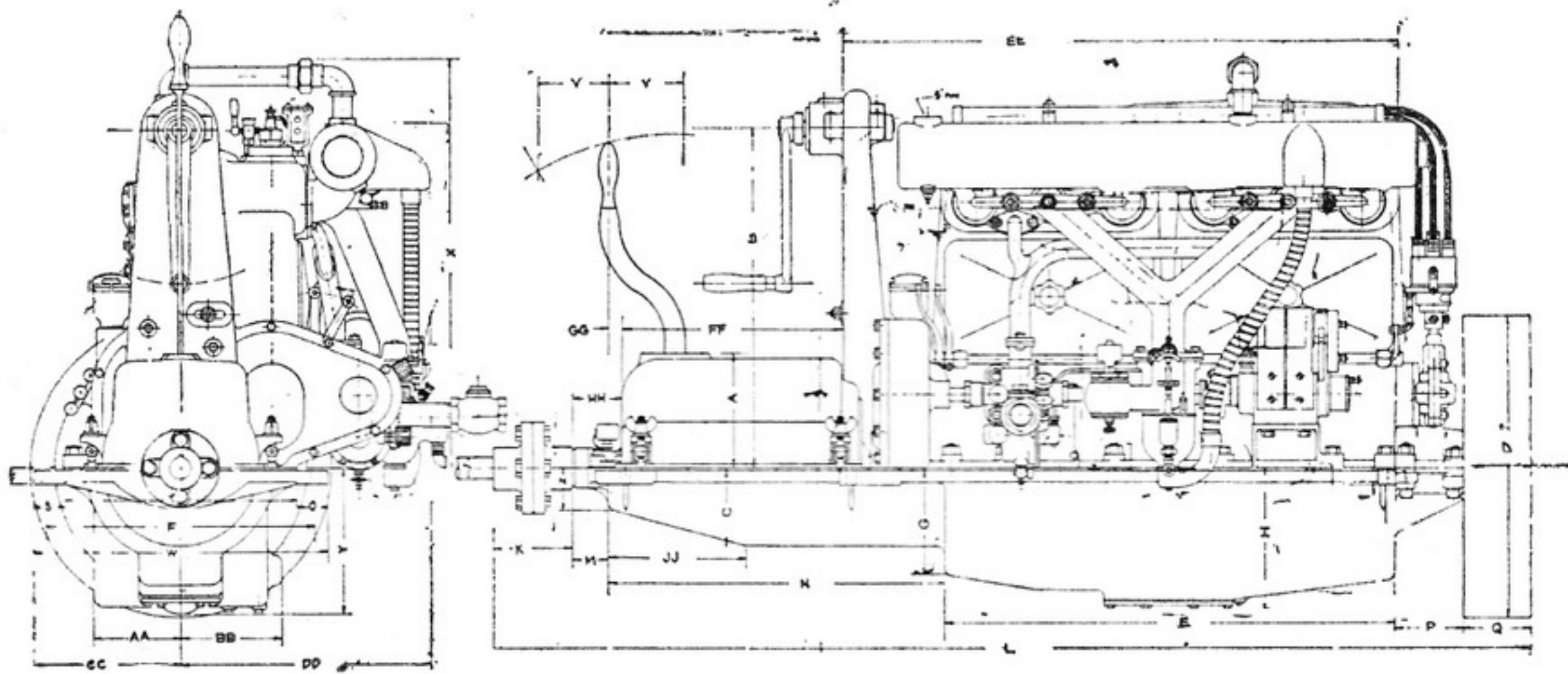
The cylinders are of close grained gray iron cast en bloc, machined and tested like other Buffalo models. They are thoroughly water jacketed with large panels for cleaning. The base has a solid extension for the reverse gear. Pistons are of gray iron and balanced. Each piston has three ring grooves, the rings being above the hardened and ground piston pin which is held in place by a special lock ring which fits in a groove around the piston and passes around the end of the piston pin.

The connecting rods are drop forged from O. H. steel of H section, the lower connecting rod bearing being of bronze lined with babbitt, with bronze bushings at the upper end. The connecting rod bolts are of special alloy steel, heat treated. The crankshaft is of a special forged steel, a large margin of safety being allowed. The cams, made of forged steel, case-hardened and ground are a driving fit to the camshaft, and are held in place by a woodruff key and taper pins. Valves are of the poppet type with tapering seats, and are easily accessible by inspection plugs. Lubrication is by means of a gravity oiler and Buffalo ring oilers on the crankpins. Ignition is by means of a battery distributor system. The Buffalo reverse gear is of the planetary type with expanding wings. Flywheel is balanced by the running balance method.

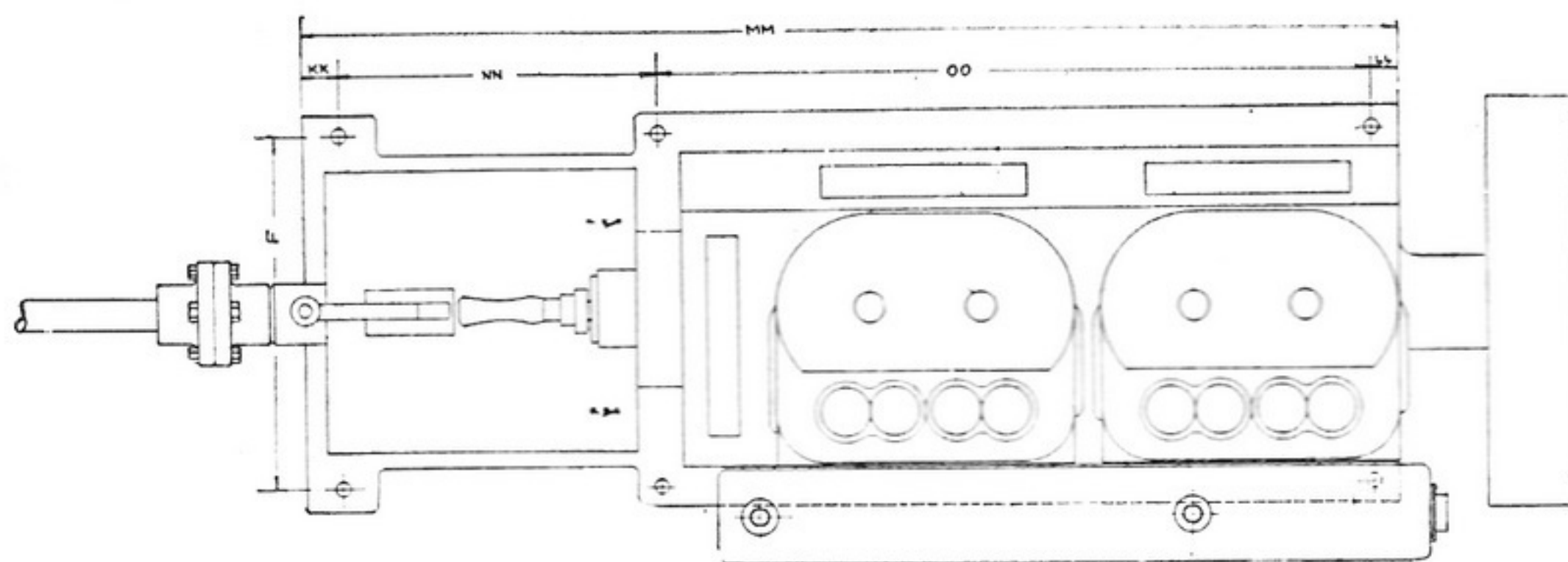


# The Buffalo Book

## Measurements 16-20 H. P. and 25-30 H. P. Cruiser and Runabout Type

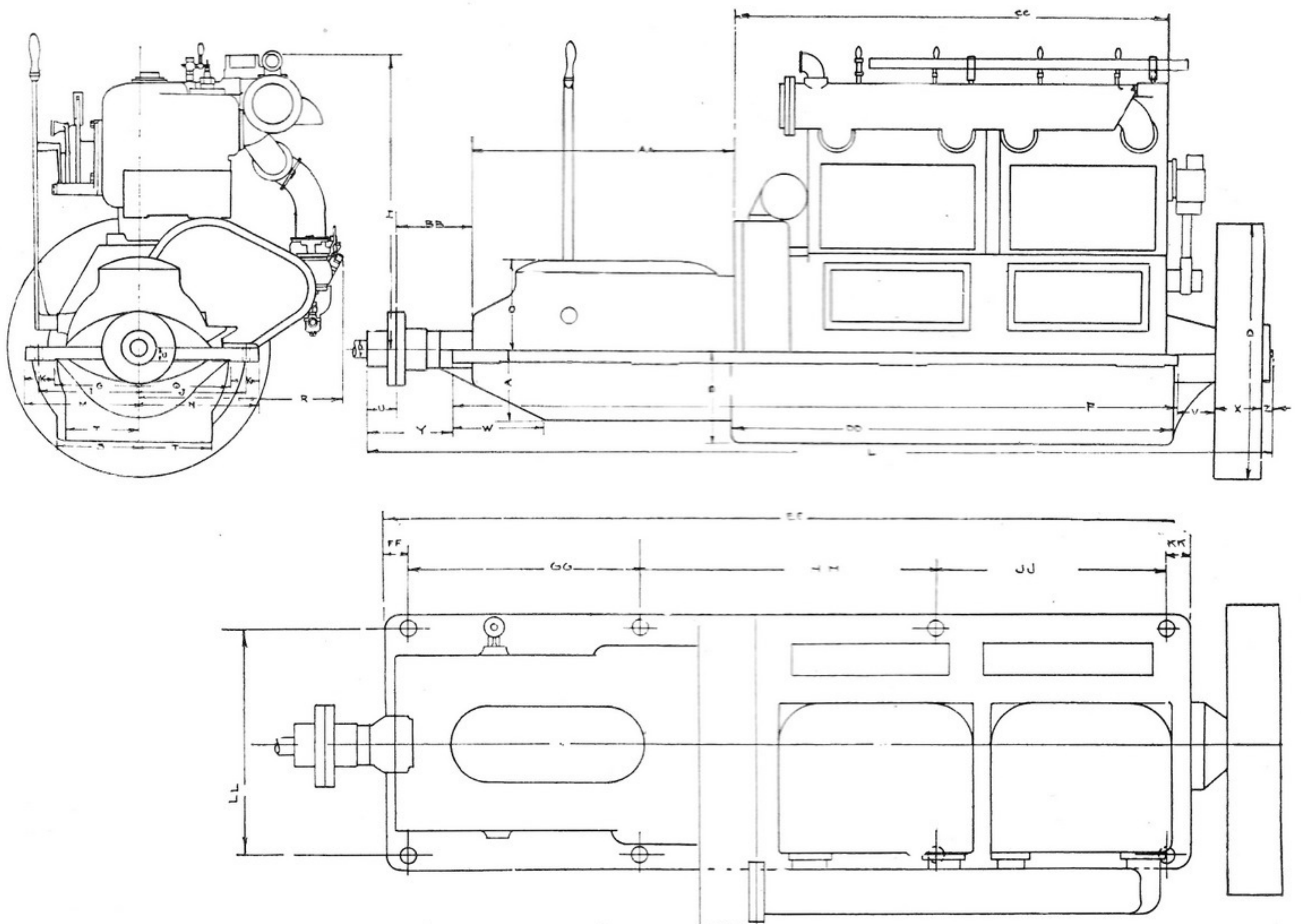


	16-20 H. P.	25-30 H. P.
A	5 1/4"	6 1/8"
B	19 7/8"	19 7/8"
C	4 3/32"	4 1/2"
D	16"	17 1/2"
E	27 25/32"	26 1/8"
F	14 1/4"	15 5/8"
G	6"	6"
H	8 1/8"	8 1/8"
J	1"	1 1/4"
K	3 3/4"	3 3/4"
L	4' 7 1/4"	4' 11 1/16"
M	17 1/8"	2 1/8"
N	17 1/16"	19 1/16"
O	1 1/2"	1 3/4"
P	1 3/4"	4"
Q	3"	3 3/8"
R	15 1/16"	15 1/16"
S	1 1/2"	1 3/4"
T	13"	13 1/2"
V	4"	4"
W	16"	17"
X	22 7/8"	23 7/8"
Y	8 1/8"	8 1/8"
Z	2 1/4"	2 3/8"
AA	4 3/8"	4 5/8"
BB	3 1/2"	3 1/2"
CC	8"	8 1/2"
DD	12"	14 1/2"
EE	30 3/4"	33 1/4"
FF	13 3/4"	13"
GG	3 1/4"	3 1/4"
HH	2 1/4"	2 3/4"
JJ	8 5/8"	5 1/16"
KK	1 7/8"	2 1/16"
LL	5 5/8"	1 1/16"
MM	49 1/16"	51 1/16"
NN	15 5/16"	13 1/16"
OO	28"	30 1/16"



## Measurements 40-60 H. P. and 50-80 H. P. Cruiser and Runabout Type

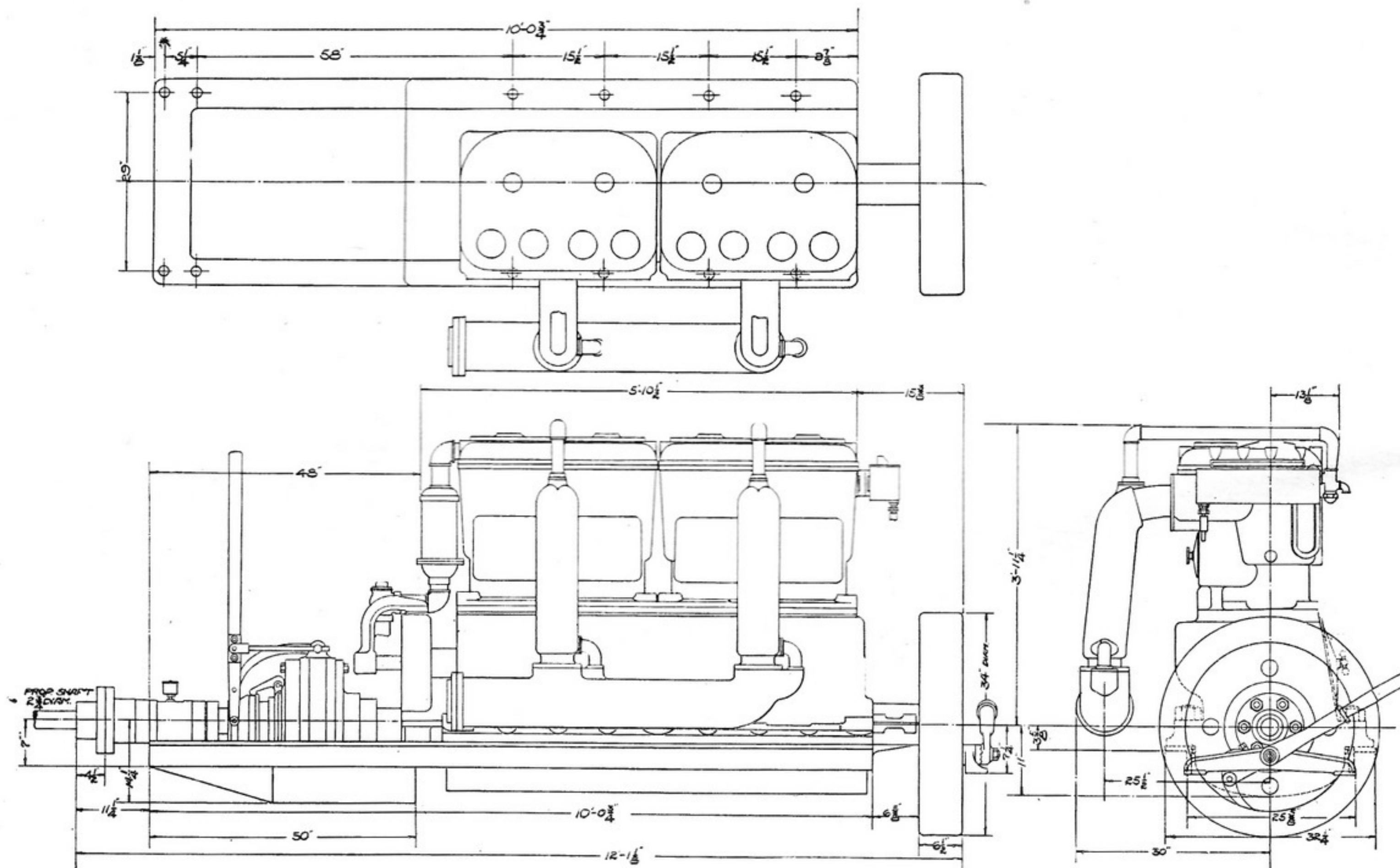
	40-60 H. P.	50-80 H. P.
A	5 1/16"	7"
B	8 1/4"	9 3/4"
C	1 1/8"	1 1/2"
D	20-22	26 or 28
E	2 1/2" pipe	3" pipe
F	61 3/8"	72 5/8"
G	7 1/16"	9 1/8"
H	25"	30 3/4"
I	8 5/16"	10 1/2"
J	9 1/16"	10 1/2"
K	2 1/16"	2 5/8"
L	76 1/16"	90"
M	9 1/2"	11 3/4"
N	10 5/16"	11 3/4"
O	7 11/16"	8 3/8"
P	1 1/2" or 1 3/4"	1 3/4" or 2"
Q	7 3/4"	9 1/8"
R	20 3/4"	23 9/16"
S	6 7/8"	7 3/8"
T	6 5/16"	6 1/2"
U	2 1/2"	3"
V	3 5/16"	3 3/4"
W	10 3/4"	13 3/8"
X	4"	4 1/2"
Y	7 1/8"	8 1/16"
Z	1 1/8"	1 1/16"
AA	22"	23 1/8"
BB	6 5/16"	7 1/16"
CC	36 1/2"	43 1/16"
DD	37 5/8"	44 1/4"
EE	61 3/8"	72 5/8"
FF	2"	2 3/8"
GG	15"	16"
HH	21"	24"
JJ	20 1/4"	24 1/2"
KK	3 1/8"	3 3/4"
LL	17 3/8"	21"



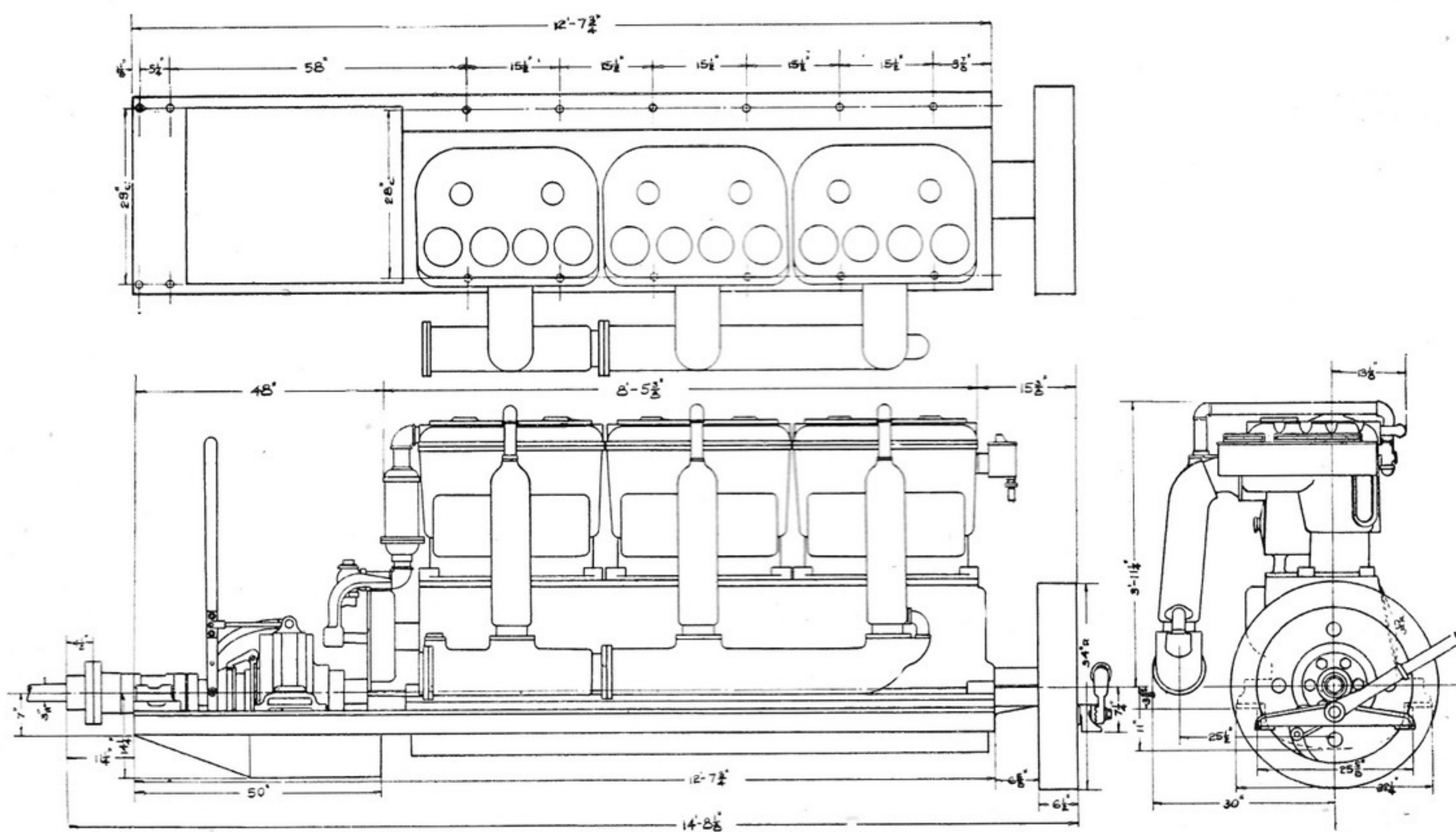


# The Buffalo Book

## Measurements of 4 Cyl. 10 in. x 12 in. Heavy Duty Models

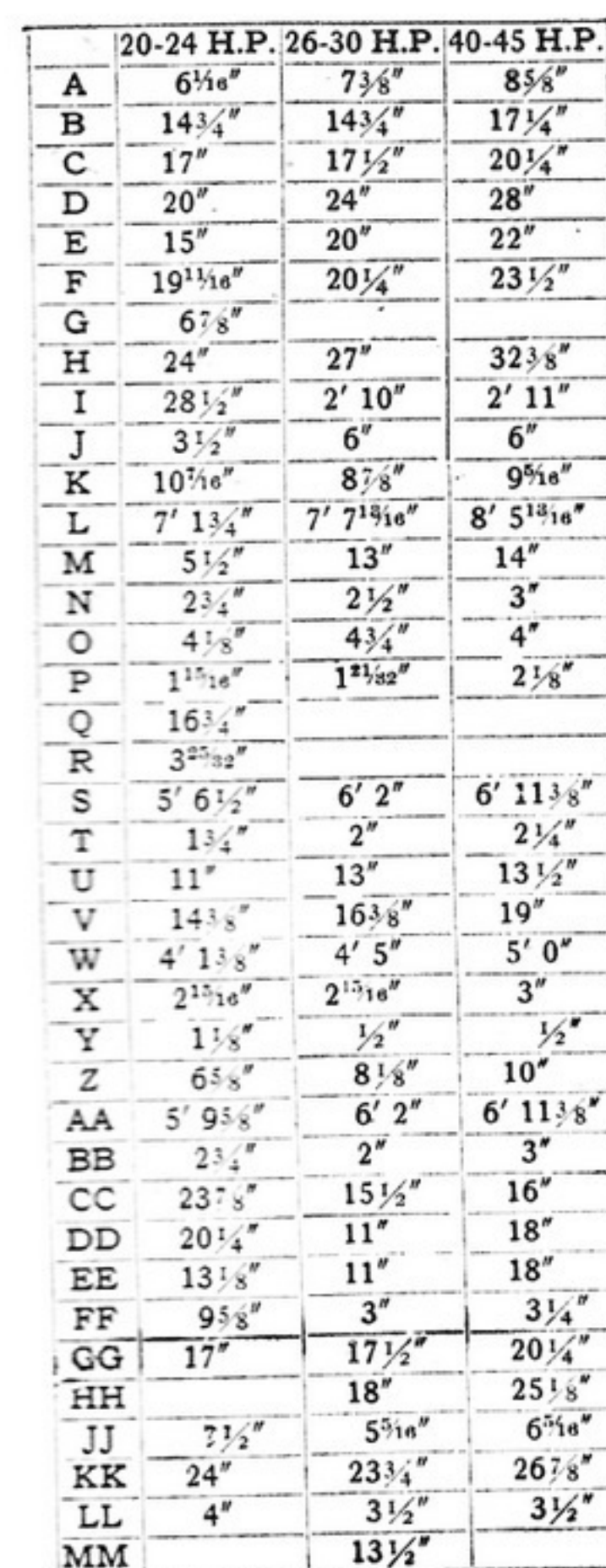
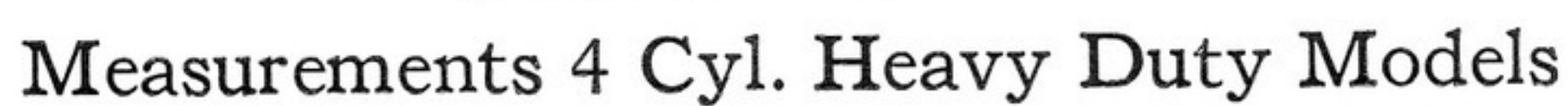


## Measurements of 6 Cyl. 10 in. x 12 in. Heavy Duty Models





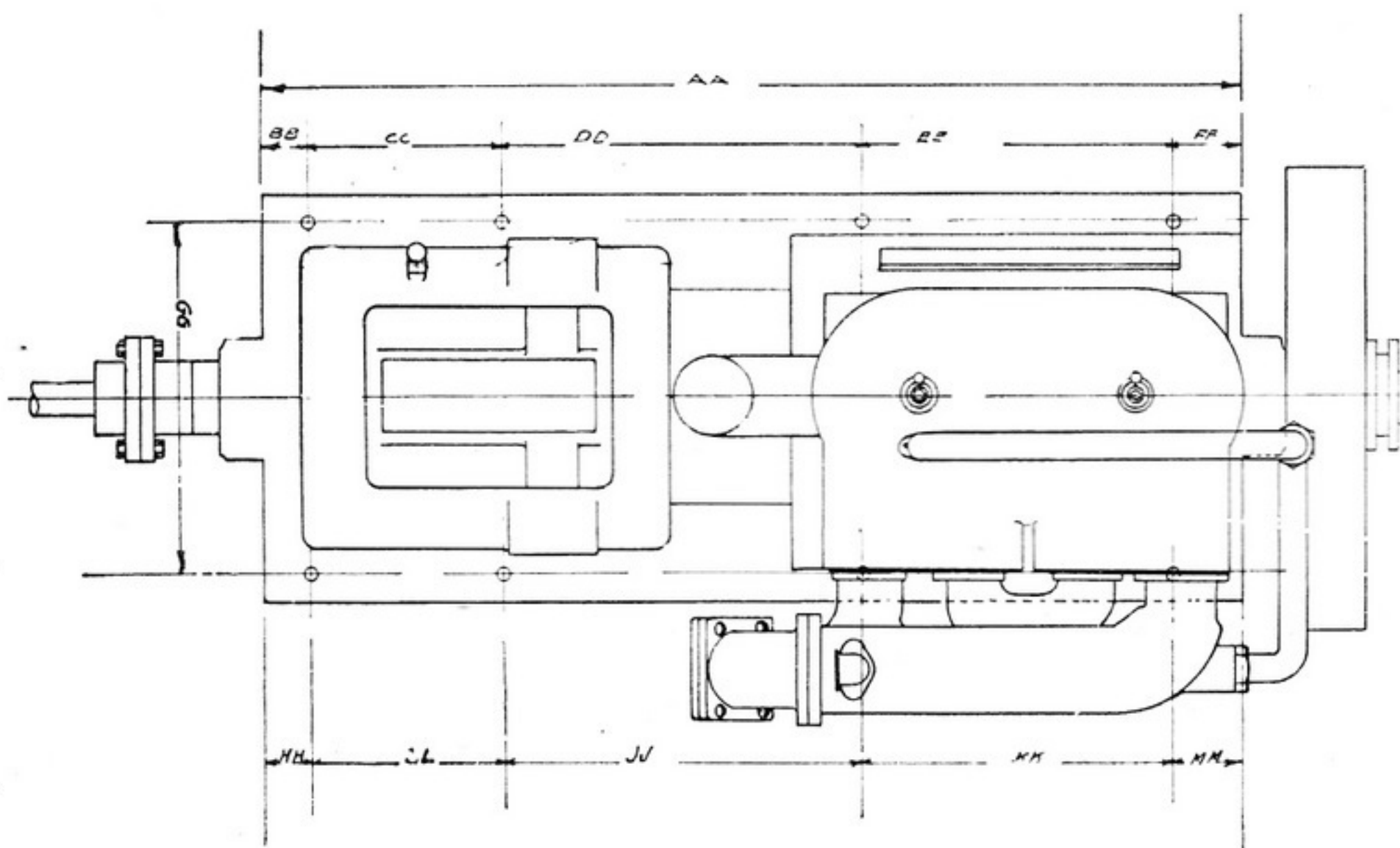
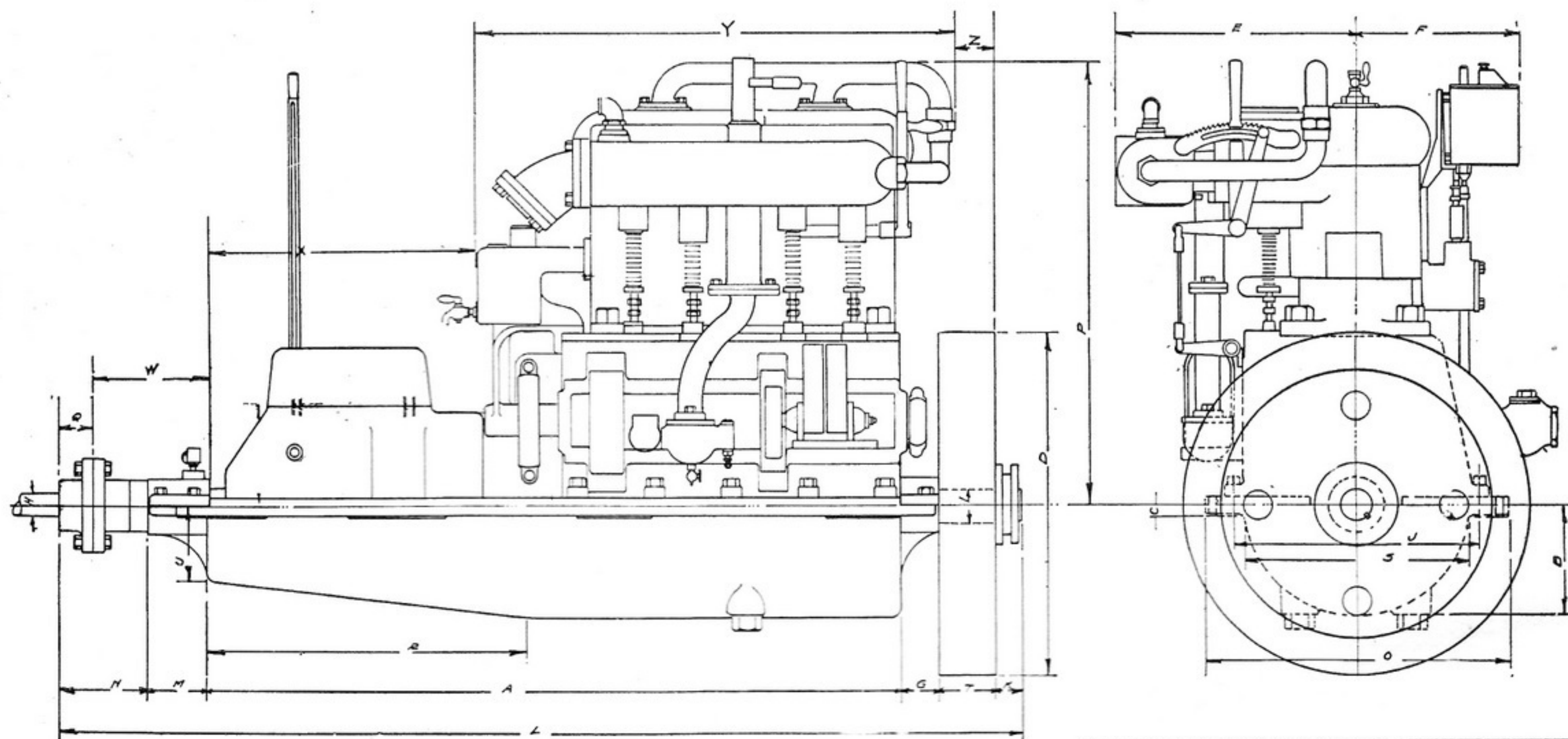
## Measurements 6 Cyl. Heavy Duty Models



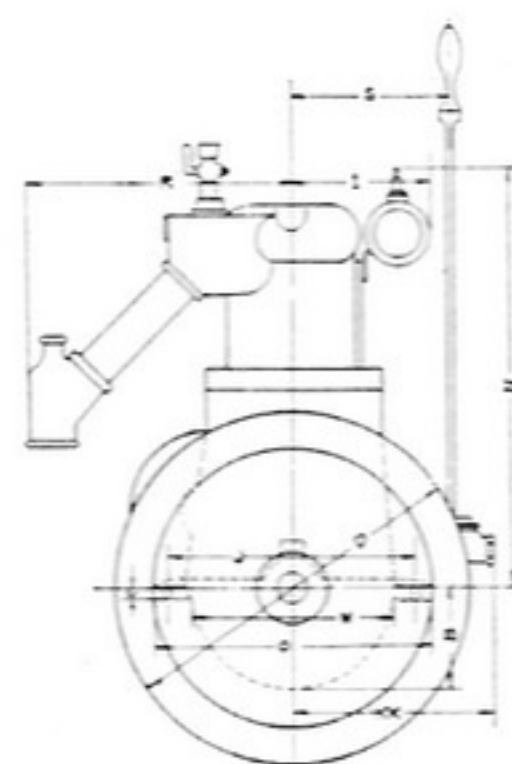
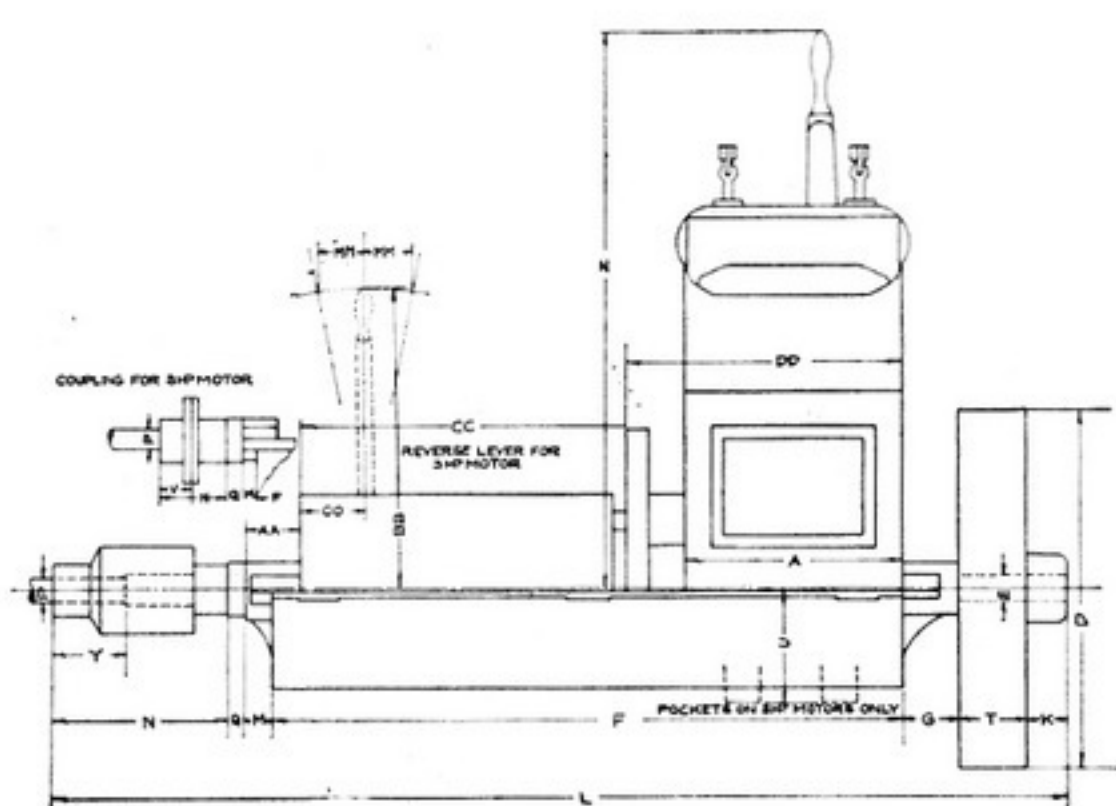


# The Buffalo Book

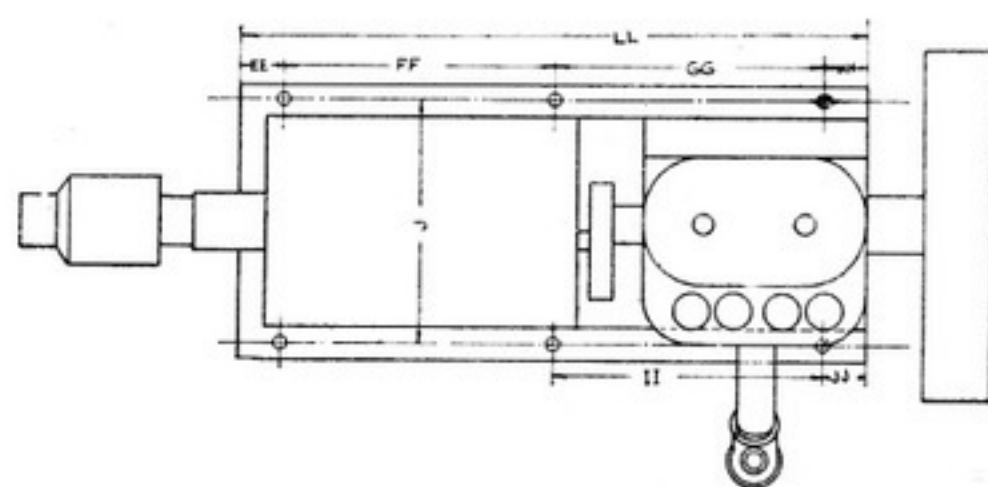
## Measurements 2 Cyl. Heavy Duty Models



## 2 Cyl. Medium Speed Models

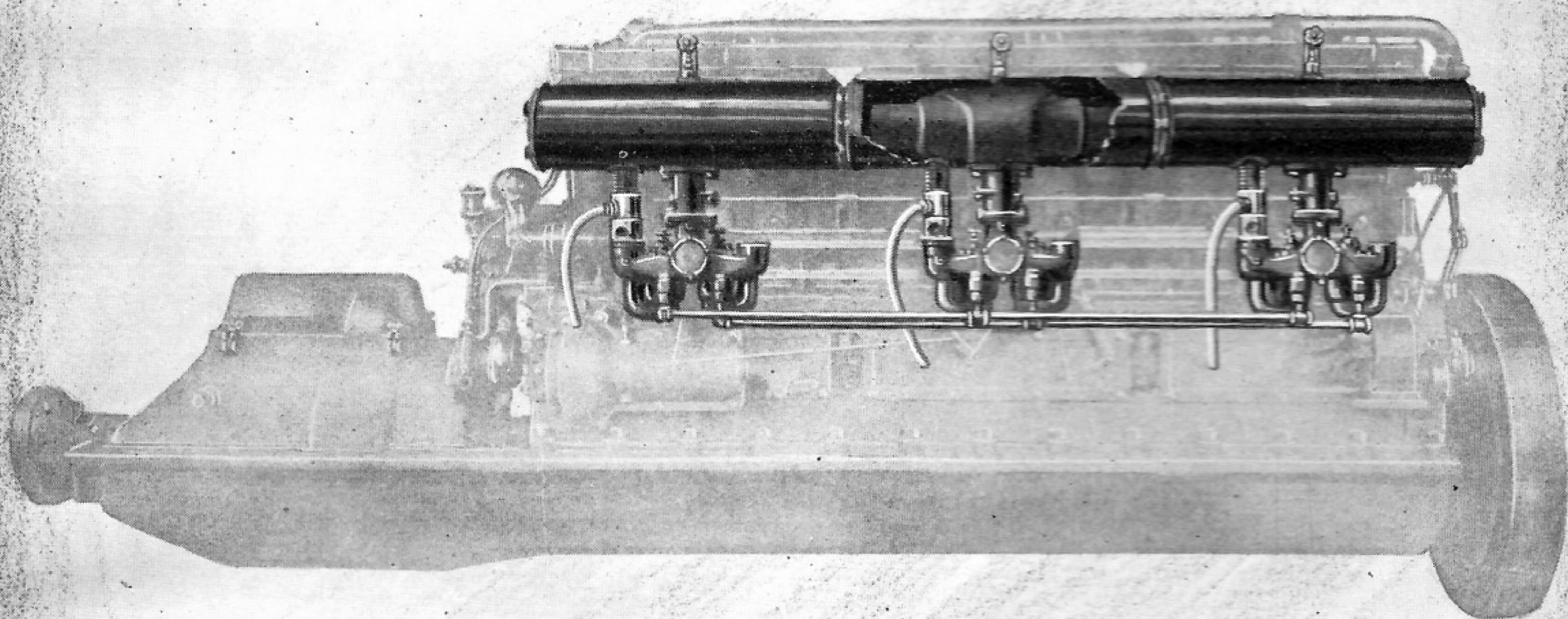
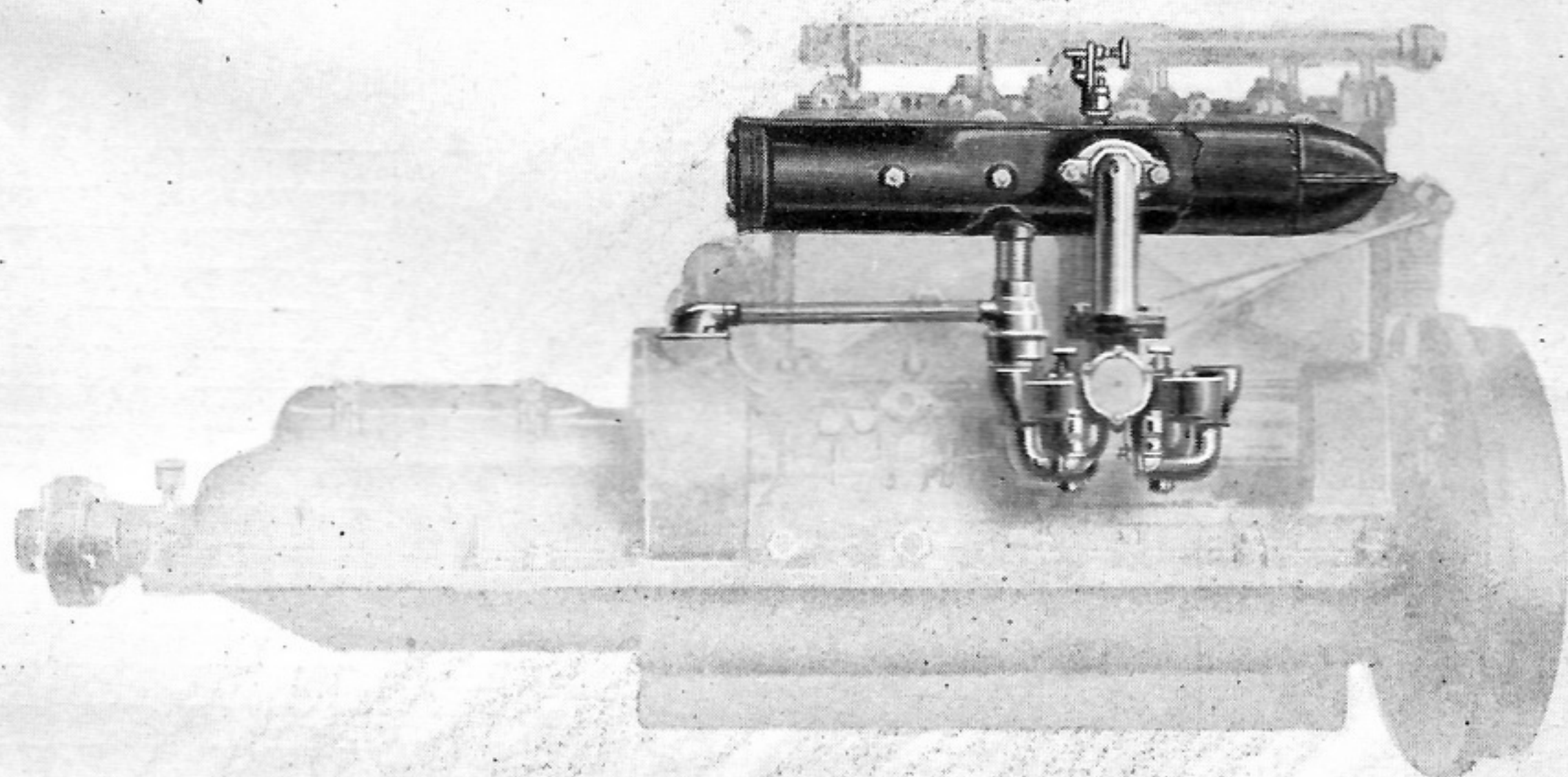
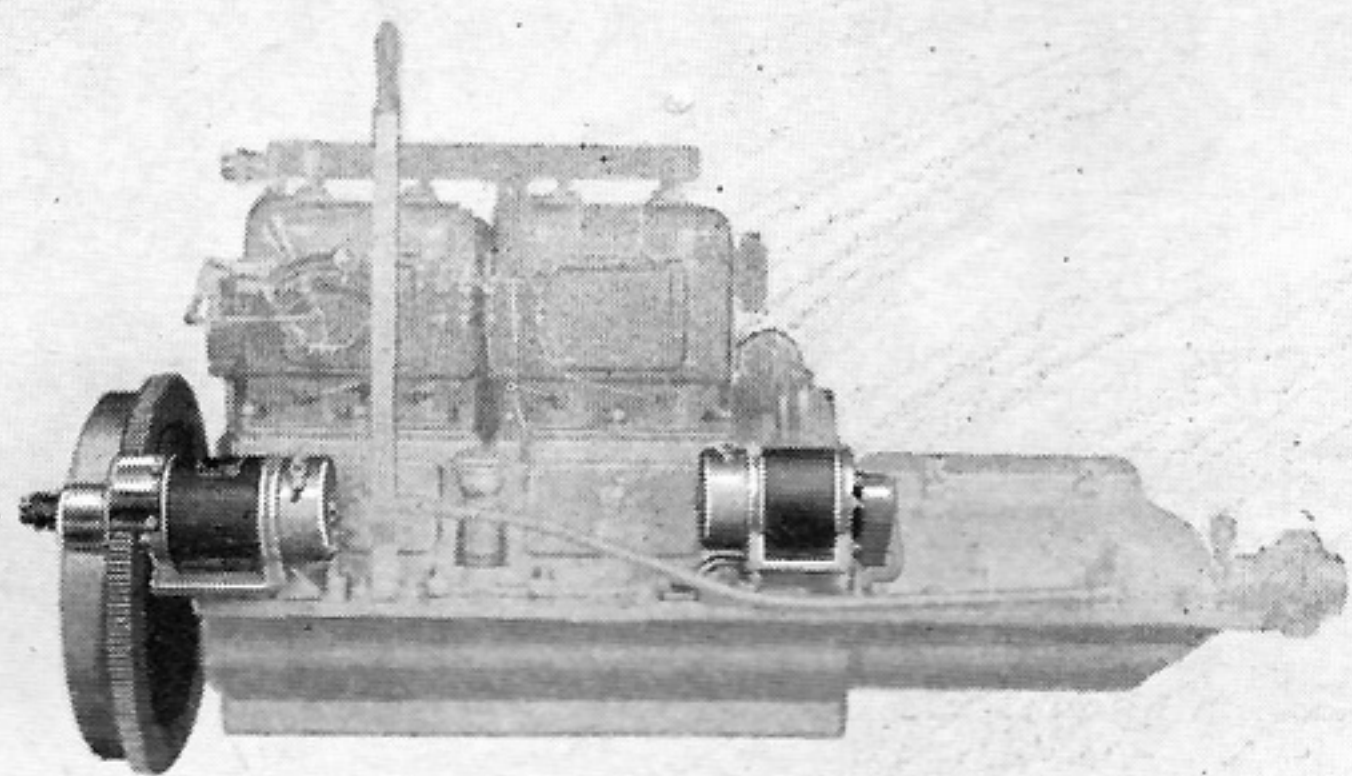


	10-12 H. P.	13-15 H. P.	20-22 H. P.
A	43 <sup>1</sup> / <sub>16</sub> "	46"	4' 5 <sup>3</sup> / <sub>16</sub> "
B	6 <sup>1</sup> / <sub>16</sub> "	7 <sup>1</sup> / <sub>2</sub> "	8 <sup>9</sup> / <sub>16</sub> "
C	13 <sup>1</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>1</sup> / <sub>2</sub> "
D	20"	23"	26"
E	14 <sup>9</sup> / <sub>16</sub> "	15 <sup>1</sup> / <sub>16</sub> "	18 <sup>3</sup> / <sub>4</sub> "
F	8 <sup>13</sup> / <sub>16</sub> "	10 <sup>5</sup> / <sub>8</sub> "	11 <sup>1</sup> / <sub>4</sub> "
G	2 <sup>5</sup> / <sub>8</sub> "	2 <sup>1</sup> / <sub>2</sub> "	3"
H	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>3</sup> / <sub>4</sub> "
I	2"	2 <sup>1</sup> / <sub>4</sub> "	2 <sup>1</sup> / <sub>2</sub> "
J	14 <sup>1</sup> / <sub>2</sub> "	16 <sup>1</sup> / <sub>4</sub> "	21 <sup>5</sup> / <sub>8</sub> "
K	1 <sup>5</sup> / <sub>16</sub> "	1 <sup>3</sup> / <sub>4</sub> "	1 <sup>3</sup> / <sub>4</sub> "
L	4' 11 <sup>1</sup> / <sub>16</sub> "	5' 4 <sup>7</sup> / <sub>8</sub> "	6' 1 <sup>3</sup> / <sub>4</sub> "
M	3 <sup>3</sup> / <sub>16</sub> "	4 <sup>5</sup> / <sub>8</sub> "	4 <sup>1</sup> / <sub>16</sub> "
N	6"	6"	7 <sup>1</sup> / <sub>8</sub> "
O	17 <sup>1</sup> / <sub>2</sub> "	20 <sup>1</sup> / <sub>4</sub> "	23 <sup>1</sup> / <sub>2</sub> "
P	25 <sup>5</sup> / <sub>16</sub> "	30 <sup>1</sup> / <sub>8</sub> "	35 <sup>7</sup> / <sub>16</sub> "
Q	2 <sup>1</sup> / <sub>2</sub> "	2 <sup>1</sup> / <sub>2</sub> "	3"
R	7"	21"	27 <sup>5</sup> / <sub>16</sub> "
S	12 <sup>3</sup> / <sub>4</sub> "	15"	17 <sup>1</sup> / <sub>8</sub> "
T	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>3</sup> / <sub>4</sub> "	4"
U	6 <sup>1</sup> / <sub>16</sub> "	5 <sup>3</sup> / <sub>4</sub> "	6 <sup>1</sup> / <sub>16</sub> "
V	6 <sup>5</sup> / <sub>16</sub> "	6 <sup>15</sup> / <sub>16</sub> "	6 <sup>3</sup> / <sub>4</sub> "
W	7"	8 <sup>1</sup> / <sub>4</sub> "	8 <sup>5</sup> / <sub>8</sub> "
X	15 <sup>3</sup> / <sub>4</sub> "	18 <sup>9</sup> / <sub>16</sub> "	21"
Y	27 <sup>7</sup> / <sub>16</sub> "	31"	35 <sup>3</sup> / <sub>4</sub> "
Z	3 <sup>5</sup> / <sub>8</sub> "	2 <sup>5</sup> / <sub>16</sub> "	3 <sup>1</sup> / <sub>2</sub> "
AA	45"	48 <sup>3</sup> / <sub>8</sub> "	55 <sup>7</sup> / <sub>8</sub> "
BB	2"	2 <sup>1</sup> / <sub>4</sub> "	1 <sup>5</sup> / <sub>16</sub> "
CC		9 <sup>5</sup> / <sub>8</sub> "	24 <sup>1</sup> / <sub>4</sub> "
DD	16 <sup>1</sup> / <sub>2</sub> "	17 <sup>3</sup> / <sub>4</sub> "	13 <sup>15</sup> / <sub>16</sub> "
EE	17 <sup>1</sup> / <sub>2</sub> "	15 <sup>1</sup> / <sub>4</sub> "	13 <sup>1</sup> / <sub>2</sub> "
FF	9"	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>4</sub> "
GG	15 <sup>1</sup> / <sub>4</sub> "	17 <sup>1</sup> / <sub>2</sub> "	21 <sup>5</sup> / <sub>8</sub> "
HH	2"	2 <sup>1</sup> / <sub>4</sub> "	1 <sup>5</sup> / <sub>16</sub> "
JJ	15"	18 <sup>3</sup> / <sub>4</sub> "	13 <sup>15</sup> / <sub>16</sub> "
KK	9"	14 <sup>1</sup> / <sub>4</sub> "	13 <sup>1</sup> / <sub>2</sub> "
LL	16 <sup>1</sup> / <sub>2</sub> "	9 <sup>5</sup> / <sub>8</sub> "	24 <sup>1</sup> / <sub>4</sub> "
MM	2 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>4</sub> "



	3-4 H. P.	5-6 H. P.		3-4 H. P.	5-6 H. P.		3-4 H. P.	5-6 H. P.
A	9 <sup>5</sup> / <sub>8</sub> "	9 <sup>3</sup> / <sub>4</sub> "	N	3"	7 <sup>7</sup> / <sub>8</sub> "	BB	15 <sup>1</sup> / <sub>2</sub> "	
B	4 <sup>1</sup> / <sub>8</sub> "	4 <sup>1</sup> / <sub>2</sub> "	O	11 <sup>1</sup> / <sub>2</sub> "	12 <sup>1</sup> / <sub>4</sub> "	CC	12"	14 <sup>7</sup> / <sub>8</sub> "
C	3 <sup>5</sup> / <sub>8</sub> "	7 <sup>1</sup> / <sub>16</sub> "	P	3 <sup>1</sup> / <sub>4</sub> "	1"	DD	12 <sup>1</sup> / <sub>4</sub> "	12 <sup>3</sup> / <sub>4</sub> "
D	14"	16"	Q	3 <sup>1</sup> / <sub>4</sub> "	7 <sup>7</sup> / <sub>8</sub> "	EE	2"	2"
E	1 <sup>1</sup> / <sub>8</sub> "	1 <sup>1</sup> / <sub>4</sub> "	R	10 <sup>1</sup> / <sub>4</sub> "	12"	FF	10 <sup>7</sup> / <sub>8</sub> "	12 <sup>1</sup> / <sub>8</sub> "
F	25"	28 <sup>1</sup> / <sub>4</sub> "	S		7"	GG	11"	12 <sup>7</sup> / <sub>8</sub> "
G	1 <sup>1</sup> / <sub>2</sub> "	2 <sup>1</sup> / <sub>2</sub> "	T	2 <sup>1</sup> / <sub>4</sub> "	3"	HH	1 <sup>1</sup> / <sub>8</sub> "	1 <sup>1</sup> / <sub>4</sub> "
H	17 <sup>7</sup> / <sub>8</sub> "	19 <sup>7</sup> / <sub>8</sub> "	U	5 <sup>1</sup> / <sub>8</sub> "		II		12 <sup>1</sup> / <sub>8</sub> "
I	6"	6"	V	1 <sup>1</sup> / <sub>2</sub> "		JJ		2"
J	10"	10 <sup>7</sup> / <sub>8</sub> "	W	8 <sup>1</sup> / <sub>4</sub> "	9"	KK	7 <sup>3</sup> / <sub>4</sub> "	
K	1 <sup>18</sup> / <sub>32</sub> "	1 <sup>7</sup> / <sub>8</sub> "	Y		2 <sup>3</sup> / <sub>4</sub> "	LL	25"	28 <sup>1</sup> / <sub>4</sub> "
L	34 <sup>13</sup> / <sub>32</sub> "	46 <sup>3</sup> / <sub>4</sub> "	Z		26"	MM	1 <sup>1</sup> / <sub>2</sub> "	
M	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>3</sup> / <sub>8</sub> "	AA	1 <sup>1</sup> / <sub>4</sub> "	2"	OO	4 <sup>1</sup> / <sub>2</sub> "	







## Kerosene Device

**T**HE Buffalo kerosene vaporizer is not an experiment but a proven device by means of which engines of all sizes above 10 H. P. are successfully operating on kerosene. It consists of a combined intake and exhaust manifold. The in-going gas is passed through a chamber cast integral with and surrounding the exhaust manifold, and is heated by the exhaust gases. There is a dual carburetor, one side of which is adjusted to operate on gasoline and the other side on kerosene. The engine is started and operated on gasoline until the manifold is sufficiently heated to thoroughly vaporize kerosene, then the throw-over valve controlling the change of fuel is turned to the kerosene side, throwing the kerosene carburetor into operation and at the same time closing off the gasoline carburetor. Fresh water is admitted to the kerosene vaporizer by a special drop valve. The water is turned instantly into steam and prevents formation of carbon in the cylinder and retards combustion, thereby allowing gases to expand during full length of the power stroke.

## Electric Starter

**A**LL Buffalo models can be equipped with a two unit electric starting and lighting system, with the exception of the 3-4 H. P. and the 5-6 H. P. By "two unit system" it is meant that there is an electric starting motor for cranking the engine and a separate generator for charging the storage battery.



## Equipment

**EQUIPMENT "A"**—Consists of engine only (without reverse gear and with short base), magneto (except two-cylinder Medium-Speed engines which have only battery ignition) including spark coil, switch and muffler (if desired), set of tools, oiling system, as described elsewhere—starting device, carburetor attached and with warm-air device fitted, water pump attached (all engines of 10 h. p. and over, excepting the two smaller sizes of the Cruiser and Runabout Type are also fitted with air pumps, and with separate bilge pumps), ignition wire, one gallon of oil, and instruction book.

**EQUIPMENT "C"**—Consists of engine, reverse gear, clutch, levers and fittings, mounted in extension engine base with housing, coupling, steel propeller shaft, bronze stuffing box and stern bearing, solid bronze propeller, set of tools, magneto (except on two cylinder, Medium-Speed engines which have battery ignition only), spark coil, switch, muffler (if desired), oiling system, as described elsewhere—ball thrust and bearing mounted on after end of engine base, water pump attached (all engines of 10 h. p. and over, excepting the two smaller sizes of the Cruiser and Runabout Type, are also fitted with air pumps, and with separate bilge pumps), starting device, wire, lag screws, sea cock, water scoop, carburetor attached, and with warm-air device fitted, one gallon of oil, and instruction book.

**IGNITION**—Prices cover high tension ignition on all engines—double system being furnished on all engines 10 h. p. and over, as previously explained. If low tension or make-and-break ignition is preferred, it will be furnished on any engines of the Medium-Speed or Heavy-Duty types, but not on the Cruiser and Runabout models.

**KEROSENE**—We cannot furnish our kerosene device for the 3-4 h. p. All other sizes can be so equipped at net prices as quoted.

**AIR STARTING DEVICE**—This device we apply only to four- and six-cylinder engines of the Heavy-Duty type. The price list covers everything necessary except the pressure tank, which, because of the various shapes and sizes needed to suit individual requirements, it is impossible to make standard equipment. Gauge and safety valve are included.

**ELECTRIC STARTERS**—Electric starters can be supplied on all models if desired, at the prices quoted in price list.

*All prices, including extras, are strictly net as quoted. The extra prices for special equipment apply only when such equipment is ordered with engine and not for separate purchase. A price list covering such material when sold separately will be sent on application.*



## Shipping Weights and Measurements

These weights and measurements apply to engines boxed for export shipment. The gross weights for domestic shipment will be found to be considerably less.

- 3-4 H. P. MEDIUM SPEED WITH EQUIPMENT "A"—Shipment consists of one box containing motor and outfit. Gross weight, 340 pounds; net weight, 224 pounds. Measurements, 34x32x23 inches.
- 3-4 H. P. MEDIUM SPEED WITH EQUIPMENT "C"—Shipment consists of one box containing motor and outfit. Gross weight, 470 pounds; net weight, 300 pounds. Measurements, 38x32x23 inches. One box containing shaft. Gross weight, 31 pounds; net weight, 12 pounds. Measurements, 106x4x3 inches.
- 5-6 H. P. MEDIUM SPEED WITH EQUIPMENT "A"—Shipment consists of one box containing motor and outfit. Gross weight, 375 pounds; net weight, 250 pounds. Measurements, 36x34x26 inches.
- 5-6 H. P. MEDIUM SPEED WITH EQUIPMENT "C"—Shipment consists of one box containing motor and outfit. Gross weight, 680 pounds; net weight, 460 pounds. Measurements, 42x36x26 inches. One box containing shaft. Gross weight, 50 pounds; net weight, 30 pounds. Measurements, 130x4x3 inches.
- 16-20 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "A"—(Aluminum Base). Gross weight, 780 pounds; net weight, 510 pounds. Measurements, 48x38x28 inches.
- 16-20 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "C"—(Aluminum Base). Shipment consists of one box containing motor and outfit. Gross weight, 930 pounds; net weight, 660 pounds. Measurements, 59x38x28 inches. One box containing shaft. Gross weight, 50 pounds; net weight, 30 pounds. Measurements, 130x3x4 inches.
- 16-20 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "A"—(Iron Base). Shipment consists of one box containing motor and outfit. Gross weight, 1000 pounds; net weight, 776 pounds. Measurements, 48x38x28 inches.
- 16-20 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "C"—(Iron Base). Shipment consists of one box containing motor and outfit. Gross weight, 1150 pounds; net weight, 810 pounds. Measurements, 59x38x28 inches. One box containing shaft. Gross weight, 50 pounds; net weight, 30 pounds. Measurements, 130x3x4 inches.
- 25-30 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "A"—(Aluminum Base). Shipment consists of one box containing motor and outfit. Gross weight, 1069 pounds; net weight, 550 pounds. Measurements, 54x40x32 inches.
- 25-30 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "C"—(Aluminum Base). Shipment consists of one box containing motor and outfit. Gross weight, 1300 pounds; net weight, 870 pounds. Measurements, 62x32x40 inches. One box containing shaft. Gross weight, 60 pounds; net weight, 46 pounds. Measurements, 130x3x4 inches.
- 25-30 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "A"—(Iron Base). Shipment consists of one box containing motor and outfit. Gross weight, 1110 pounds; net weight 833 pounds. Measurements 54x40x32 inches.
- 25-30 H.P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "C"—(Iron Base). Shipment consists of one box containing motor and equipment. Gross weight, 1480 pounds; net weight, 1044 pounds. Measurements same as with aluminum base. One box containing shaft. Weights and measurements same as with aluminum base.
- 40-60 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "A"—(Iron Base). Shipment consists of one box containing motor and outfit. Gross weight, 2050 pounds; net weight, 1520 pounds. Measurements, 73x44x38 inches.
- 40-60 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "C"—(Iron Base). Shipment consists of one box containing motor and equipment. Gross weight, 2440 pounds; net weight, 1835 pounds. Measurements, 80x44x38 inches. One box containing shaft. Gross weight, 90 pounds; net weight, 64 pounds. Measurements, 130x4x4 inches.
- 40-60 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "A"—(Aluminum Base). Shipment consists of one box containing motor and equipment. Gross weight, 1735 pounds; net weight, 1205 pounds. Measurements, 73x44x38 inches.
- 40-60 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "C"—(Aluminum Base). Shipment consists of one box containing motor and equipment. Gross weight, 1920 pounds; net weight, 1630 pounds. Measurements, 80x44x38 inches. One box containing shaft. Gross weight, 90 pounds; net weight, 64 pounds. Measurements, 130x4x4 inches.
- 50-80 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "A"—(Iron Base). Shipment consists of one box containing motor and equipment. Gross weight, 3250 pounds; net weight, 2440 pounds.
- 50-80 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "C"—(Iron Base). Shipment consists of one box containing motor and equipment. Gross weight, 3510 pounds; net weight, 2900 pounds. Measurements, 94x50x44 inches. One box containing shaft. Gross weight, 165 pounds; net weight, 123 pounds. Measurements, 130x4x5 inches.



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(Continued from page 37)

## Shipping Weights and Measurements

These weights and measurements apply to engines boxed for export shipment. The gross weights for domestic shipment will be found to be considerably less.

- 50-80 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "A"—(Aluminum Base). Shipment consists of one box containing motor and equipment. Gross weight, 2758 pounds; net weight, 2018 pounds.
- 50-80 H. P. CRUISER AND RUNABOUT ENGINE WITH EQUIPMENT "C"—(Aluminum Base). Shipment consists of one box containing motor and equipment. Gross weight, 3130 pounds; net weight, 2150 pounds. Measurements, 94x50x44 inches. One box containing shaft. Gross weight, 165 pounds; net weight, 123 pounds. Measurements, 130x4x5 inches.
- 10-12 H. P. HEAVY DUTY WITH EQUIPMENT "A"—Shipment consists of one box containing motor and outfit. Gross weight, 1475 pounds; net weight, 950 pounds. Measurements, 48x42x32 inches.
- 10-12 H. P. HEAVY DUTY WITH EQUIPMENT "C"—Shipment consists of one box containing motor and outfit. Gross weight, 1600 pounds; net weight, 1250 pounds. Measurements, 64x42x32 inches. One box containing shaft. Gross weight, 85 pounds; net weight, 66 pounds. Measurements, 130x4x4 inches.
- 13-15 H. P. HEAVY DUTY WITH EQUIPMENT "A"—Shipment consists of one box containing motor and outfit. Gross weight, 1375 pounds; net weight, 1100 pounds. Measurements, 48x46x32 inches.
- 13-15 H. P. HEAVY DUTY WITH EQUIPMENT "C"—Shipment consists of one box containing motor and outfit. Gross weight, 2200 pounds; net weight, 1730 pounds. Measurements, 67x46x32 inches. One box containing shaft. Gross weight, 100 pounds; net weight, 75 pounds. Measurements, 130x4x4 inches.
- 20-22 H. P. HEAVY DUTY WITH EQUIPMENT "A"—Shipment consists of one box containing motor and equipment. Gross weight, 2050 pounds; net weight, 1640 pounds. Measurements, 50x52x38 inches.
- 20-22 H. P. HEAVY DUTY WITH EQUIPMENT "C"—Shipment consists of one box containing motor and equipment. Gross weight, 3000 pounds; net weight, 2200 pounds. Measurements, 77x52x38 inches. One box containing shaft. Gross weight, 118 pounds; net weight, 92 pounds. Measurements, 130x4x4 inches.
- 20-24 H. P. HEAVY DUTY WITH EQUIPMENT "A"—Shipment consists of one box containing motor and equipment. Gross weight, 2290 pounds; net weight, 1690 pounds. Measurements, 68x42x32 inches.
- 20-24 H. P. HEAVY DUTY WITH EQUIPMENT "C"—Shipment consists of one box containing motor and equipment. Gross weight, 2640 pounds; net weight, 2040 pounds. Measurements, 89x42x32 inches. One box containing shaft. Gross weight, 118 pounds; net weight, 92 pounds. Measurements, 130x4x4 inches.
- 26-30 H. P. HEAVY DUTY WITH EQUIPMENT "A"—Shipment consists of one box containing motor and equipment. Gross weight, 2900 pounds; net weight, 2200 pounds. Measurements, 72x42x34 inches.
- 26-30 H. P. HEAVY DUTY WITH EQUIPMENT "C"—Shipment consists of one box containing motor and equipment. Gross weight, 3300 pounds; net weight, 2600 pounds. Measurements, 94x48x34 inches. One box containing shaft. Gross weight, 170 pounds; net weight, 140 pounds. Measurements, 130x5x4 inches.
- 40-45 H. P. HEAVY DUTY WITH EQUIPMENT "A"—Shipment consists of box containing motor and equipment. Gross weight, 3920 pounds; net weight, 3200 pounds. Measurements, 76x60x40 inches.
- 40-45 H. P. HEAVY DUTY WITH EQUIPMENT "C"—Shipment consists of one box containing motor and equipment. Gross weight, 4990 pounds; net weight, 3975 pounds. Measurements, 108x60x42 inches. One box containing shaft. Gross weight, 200 pounds; net weight, 175 pounds. Measurements, 130x5x4 inches.
- 60-70 H. P. HEAVY DUTY WITH EQUIPMENT "A"—Shipment consists of one box containing motor and equipment. Gross weight, 5952 pounds; net weight, 4675 pounds. Measurements, 99x60x42 inches.
- 60-70 H. P. HEAVY DUTY WITH EQUIPMENT "C"—Shipment consists of one box containing motor and equipment. Gross weight, 7200 pounds; net weight, 5800 pounds. Measurements, 137x60x42 inches. One box containing shaft. Gross weight, 320 pounds; net weight, 271 pounds. Measurements, 130x5x5 inches.
- 85-100 H. P. HEAVY DUTY WITH EQUIPMENT "A"—Shipment consists of one box containing motor and equipment. Gross weight, 11320 pounds; net weight, 9820 pounds. Measurements, 108x74x52 inches.
- 85-100 H. P. HEAVY DUTY WITH EQUIPMENT "C"—Shipment consists of one box containing motor and equipment. Gross weight, 12,750 pounds; net weight, 11,020 pounds. Measurements, 149x74x52 inches. One box containing shaft. Gross weight, 360 pounds; net weight, 320 pounds. Measurements, 5x5x190 inches.
- 125-150 H. P. HEAVY DUTY WITH EQUIPMENT "A"—Shipment consists of one box containing motor and equipment. Gross weight, 12,750 pounds; net weight, 11,000 pounds. Measurements, 144x73x52 inches.
- 125-150 H. P. HEAVY DUTY WITH EQUIPMENT "C"—Shipment consists of one box containing motor and equipment. Gross weight, 13,000 pounds; net weight, 11,250 pounds. Measurements, 174x73x52 inches. One box containing shaft. Gross weight, 492 pounds; net weight, 404 pounds. Measurements, 8x8x190 inches.

NOTE—While these shipping weights and dimensions are believed to be as accurate as it is possible to make them, attention is called to the fact that we do not vouch for their accuracy. They are given simply as a convenience in aiding buyers to roughly estimate carrying charges.



# The Buffalo Book

## Code Words

The use of a private code in cabling will be found convenient and economical. For further telegraphic communication we request the use of Western Union Code, but any of the standard codes will be understood.

Cable Address, "Fischer"—Buffalo

### Outfits

3- 4 h. p. Equipment A.....	<i>Trice</i>	13- 15 h. p. Equipment C.....	<i>Pence</i>
3- 4 h. p. Equipment C.....	<i>Tring</i>	20- 22 h. p. Equipment A.....	<i>Duxon</i>
5- 6 h. p. Equipment A.....	<i>Quinc</i>	20- 22 h. p. Equipment C.....	<i>Duxat</i>
5- 6 h. p. Equipment C.....	<i>Quint</i>	20- 24 h. p. Equipment A.....	<i>Rever</i>
16-20 h. p. Equipment A.....	<i>Auxon</i>	20- 24 h. p. Equipment C.....	<i>Revil</i>
16-20 h. p. Equipment C.....	<i>Auxat</i>	26- 30 h. p. Equipment A.....	<i>Savag</i>
25-30 h. p. Equipment A.....	<i>Autma</i>	26- 30 h. p. Equipment C.....	<i>Savoy</i>
25-30 h. p. Equipment C.....	<i>Avant</i>	40- 45 h. p. Equipment A.....	<i>Tenan</i>
40-60 h. p. Equipment A.....	<i>Cruer</i>	40- 45 h. p. Equipment C.....	<i>Terga</i>
40-60 h. p. Equipment C.....	<i>Cruam</i>	60- 70 h. p. Equipment A.....	<i>Urhin</i>
50-80 h. p. Equipment A.....	<i>Krugo</i>	60- 70 h. p. Equipment C.....	<i>Urban</i>
50-80 h. p. Equipment C.....	<i>Krima</i>	85-100 h. p. Equipment A.....	<i>Forla</i>
10-12 h. p. Equipment A.....	<i>Smila</i>	85-100 h. p. Equipment C.....	<i>Foger</i>
10-12 h. p. Equipment C.....	<i>Smahe</i>	125-150 h. p. Equipment A.....	<i>Sixha</i>
13-15 h. p. Equipment A.....	<i>Palis</i>	125-150 h. p. Equipment C.....	<i>Sixto</i>

### Particulars

With make-and-break ignition.....	<i>Mabel</i>	*Feet extra shaft required.....	<i>Baren</i>
With jump-spark ignition.....	<i>Jacks</i>	With aluminum base.....	<i>Alum</i>
To have bronze shaft.....	<i>Barte</i>	With iron base.....	<i>Iron</i>
To have sprocket and chain rear start- ing device.....	<i>Socer</i>	With kerosene device.....	<i>Kero</i>
		With electric starter.....	<i>Elexo</i>

### Shipments

Within four days.....	<i>Fodey</i>	Within three weeks.....	<i>Serum</i>
Within one week.....	<i>Uncle</i>	Within one month.....	<i>Thora</i>
Within ten days.....	<i>Capin</i>	Within six weeks.....	<i>Toxin</i>
Within two weeks.....	<i>Sopor</i>	Within two months.....	<i>Torso</i>

### Instructions Regarding Orders

Enter order for.....	<i>Entry</i>	When can you fill our order of.....	<i>Wilet</i>
Enter order for immediate shipment.....	<i>Rigol</i>	How soon can you ship.....	<i>Hexad</i>
Enter order and hold for instructions.....	<i>Roter</i>	When will you ship.....	<i>Herod</i>
Ship to.....	<i>Septe</i>	When did you ship.....	<i>Humit</i>
Ship in care of.....	<i>Septo</i>	Duplicate our order of.....	<i>Detro</i>
To be shipped not later than.....	<i>Sanix</i>	Add to order of.....	<i>Plant</i>
Ship by freight.....	<i>Terit</i>	What will be the gross weight of.....	<i>Plura</i>
Ship by express.....	<i>Terps</i>	Wire price and delivery of.....	<i>Argol</i>
Trace shipment.....	<i>Trade</i>	Mail full information regarding.....	<i>Comes</i>

### Replies

Quotation for immediate acceptance.....	<i>Mogal</i>	We can ship immediately.....	<i>Focus</i>
We will ship.....	<i>Lumer</i>	Cannot promise definitely—are writing.....	<i>Dogma</i>
Order received.....	<i>Larch</i>	As soon as possible.....	<i>Benga</i>
Order was shipped as per your in- structions.....	<i>Lamon</i>	Impossible to give information desired by wire—are writing.....	<i>Infar</i>
Shall we ship.....	<i>Forna</i>	We can ship.....	<i>Cansh</i>
We have shipped.....	<i>Outgo</i>		

\*A numeral inserted after the word will indicate extra length required.



## Guarantee

*EACH Buffalo engine is guaranteed for one year from date of shipment as shown by invoice, this guarantee being limited to replacement in our factory of the parts giving out under normal service because of defective material or workmanship and not due to carelessness or neglect on the part of the user. If because of the circumstances the repairs cannot be made at the company's factory this warranty is limited to the shipment without charge of the parts intended to replace those found to be defective.*

*All agreements are subject to delays caused by fires, strikes, accidents or other causes beyond our control and it is understood that while defective material will be replaced no claim for labor or damages will be allowed. Carburetors, magnetos, starters, generators, batteries and other trade accessories are warranted separately by their respective manufacturers. We reserve the right to change the design of our motors and equipment when deemed advisable, without incurring any obligations to install same on engines previously sold.*

## Terms

*TWENTY-FIVE per cent of price of engine must accompany order, the balance to be paid when engine is ready for shipment or sight draft against bill of lading. We usually have engines in stock ready for shipment, and it is always best to send full amount with order, as this frequently prevents delay in shipping as well as facilitating delivery at destination.*

*All tests made at our plant are final. The buyer may have a representative present to confirm our tests, but we will not accept any tests made after engine has been shipped.*







